

RCRA RECORDS CENTER
FACILITY Port & Whitney Main St
I.D. NO. CTD990672081
FILE LOC. 2-13
OTHER REMS CODE 13501
2573

MATERIAL SAFETY DATA SHEET
PMC 1531
SECTION 1

(R) 9/18/87

Manufacturer's Name MacDermid Incorporated		RECEIVED MAY 4 1988	EMERGENCY TELEPHONE 203-575-5700
ADDRESS (Number, Street, City, State, Zip Code) 526 Huntington Avenue Waterbury, CT. 06708			MFSA EMERGENCY 24 HOUR HOTLINE: (Medical) (313) - 644 - 5626
CFR-49 - DOT Proper Shipping Name Non Hazardous		INDUSTRIAL HYGIENE	
CHEMICAL NAME AND SYNONYMS N/A		TRADE NAME AND SYNONYM Metex Strip Aid	
CHEMICAL FAMILY Salt of Sulfonic Acid		FORMULA Mixture	

SECTION II - HAZARDOUS INGREDIENTS					
PAINTS, PRESERVATIVE & SOLVENTS	Z N/A	TLV (UNITS)	ALLOYS & METALLIC COATINGS	Z N/A	TLV (UNITS)
PIGMENTS	"		BASE METAL	"	
CATALYST	"		ALLOYS	"	
VEHICLE	"		METALLIC COATINGS	"	
SOLVENTS	"		FILLER METAL PLUS OR CORE FLUX	"	
ADDITIVES	"		OTHERS	"	
OTHERS	"				
HAZARDOUS MIXTURES OR OTHER LIQUIDS, SOLIDS, OR GASES				Z	TLV (UNITS)
Salt of sulfonic acid (27215-71-0)				100	Not listed

SECTION III - PHYSICAL DATA			
BOILING POINT (F)	N/A	SPECIFIC GRAVITY (H ₂ O = 1)	N/A
VAPOR PRESSURE (MM. HG.)	0	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)	N/A	EVAPORATION RATE (= 1)	N/A
SOLUBILITY IN WATER	Appreciable		
APPEARANCE AND ODOR	Pale yellow to tan powder - odorless		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (METHOD USED) Non-flammable	FLAMMABLE LIMITS N/A	LEL	UEL
EXTINGUISHING MEDIA Waterspray, CO ₂ , alcohol, foam, dry chemical			
SPECIAL FIRE FIGHTING PROCEDURES If material is smoldering, spread burning material out thinly and douse with water. Wear self-contained breathing apparatus.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Material is an oxygen donor and can support combustion.			



RDMS DocID 2573

PMC 1531

SAFETY & WARNING INFORMATION

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PMC 1531

MAY 4 1981

Industrial Hygiene - General Requirements

(To be attached to every MacDermid Material Safety Data Sheet.)

INGESTION

All food should be kept in a separate area away from the working location. Eating, drinking, smoking and carrying of tobacco products should be prohibited in areas where there is a potential for significant exposure to this material. Before eating, drinking or smoking, hands and face should be thoroughly washed.

SKIN CONTACT

Skin contact should be prevented through the use of impervious clothing, gloves and footwear. A face shield should be worn when use conditions could result in exposure to the material.

EYE CONTACT

Eye contact should be prevented through the use of chemical safety glasses, goggles or face shield.

INHALATION

This material should only be handled in open or well-ventilated areas. Where adequate ventilation is not available and there is possibility of vapor, aerosol or mist generation, control of inhalation can be achieved through the use of a NIOSH-approved, half-face-piece cartridge, air-purifying respirator.

General Storage Requirements for Hazardous Materials

CORROSIVE MATERIALS

Corrosive materials must not be above, below or adjacent to Flammable Solids, Oxidizing Materials, Cyanide Bearing Materials (Poison).

FLAMMABLE LIQUIDS

Keep Flammable Liquids in a segregated area, preferably outside of your facility or in a Flammable Liquid storage cabinet.

DOUBLE LABELED MATERIALS

(Example: Corrosive Liquid; Poisonous NOS). Primary hazard is Corrosive, secondary hazard is Poison. Consider both hazards in storing the material. In this example, do not store near Flammable Solids, Oxidizing or Cyanide Bearing materials because of the corrosive element. Preferably keep double labeled materials separate from all other diamond labeled materials.

ACIDS/ALKALINES

Acid bearing material should be stored separate from Alkaline bearing material.

Although the information and recommendations set forth in this sheet are believed to be correct as of the date hereof, MacDermid, Inc. makes no further representations as to the completeness or accuracy of such information and recommendations.

MacDermid, Inc. shall in no event be responsible for any damages whatsoever, directly or indirectly resulting from the use of or reliance upon such information and recommendations.

No other warranty, either express or implied, of merchantability or fitness or any other nature with respect to the product or the information or recommendations herein is made hereunder.



(203) 575-5700

+ EMERGENCY DIRECTORY ASSISTANCE

(313) 644-5626



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MATERIAL SAFETY DATA SHEET

PMC 1531

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CODE 13501

1) 9/18/87-

INDUSTRIAL HYGIENE

SECTION 1

Manufacturer's Name MacDermid Incorporated				EMERGENCY TELEPHONE 203-575-5700	
ADDRESS (Number, Street, City, State, Zip Code) 526 Huntingdon Avenue Waterbury, CT. 06708				MFSA EMERGENCY 24 HOUR HOTLINE: (Medical) (313) - 644 - 5626	
CFR-49 - DOT Proper Shipping Name Non Hazardous					
CHEMICAL NAME AND SYNONYMS N/A				TRADE NAME AND SYNONYMS Metex Strip Aid	
CHEMICAL FAMILY Salt of Sulfonic Acid				FORMULA Mixture	
SECTION II - HAZARDOUS INGREDIENTS					
PAINTS, PRESERVATIVE & SOLVENTS	Z N/A	TLV (UNITS)	ALLOYS & METALLIC COATINGS	Z N/A	TLV (UNITS)
PIGMENTS	"		BASE METAL	"	
CATALYST	"		ALLOYS	"	
VEHICLE	"		METALLIC COATINGS	"	
SOLVENTS	"		FILLER METAL PLUS OR CORE FLUX	"	
ADDITIVES	"		OTHERS	"	
OTHERS	"				
HAZARDOUS MIXTURES OR OTHER LIQUIDS, SOLIDS, OR GASES				Z	TLV (UNITS)
Salt of sulfonic acid (27215-71-0)				100	Not listed
SECTION III - PHYSICAL DATA					
BOILING POINT (F)	N/A	SPECIFIC GRAVITY (H ₂ O = 1)		N/A	
VAPOR PRESSURE (MM. HG.)	0	PERCENT VOLATILE BY VOLUME (%)		0	
VAPOR DENSITY (AIR = 1)	N/A	EVAPORATION RATE (= 1)		N/A	
SOLUBILITY IN WATER	Appreciable				
APPEARANCE AND ODOR Pale yellow to tan powder - odorless					
SECTION IV - FIRE AND EXPLOSION HAZARD DATA					
FLASH POINT (METHOD USED) Non-flammable		FLAMMABLE LIMITS N/A		LEL	UEL
EXTINGUISHING MEDIA Waterspray, CO ₂ , alcohol, foam, dry chemical					
SPECIAL FIRE FIGHTING PROCEDURES If material is smoldering, spread burning material out thinly and douse with water. Wear self-contained breathing apparatus.					
UNUSUAL FIRE AND EXPLOSION HAZARDS Material is an oxygen donor and can support combustion.					

SECTION V - HEALTH HAZARD DATA**THRESHOLD LIMIT VALUE**

Not established for product.

EFFECTS OF OVEREXPOSURE-UNLESS OTHERWISE STATED, CHRONIC OR LONG-TERM HEALTH EFFECTS UNKNOWN!
Possible slight irritation to eyes, skin and mucous membranes.**EMERGENCY AND FIRST AID PROCEDURES****EYES:** Flush with water for 15 minutes. Contact physician.**SKIN:** Flush with water.**INTERNAL:** Give water. Do not induce vomiting. Contact physician.**INHALATION:** Remove to fresh air.**SECTION VI - REACTIVITY DATA****UNSTABLE****CONDITIONS TO AVOID****STABLE**

N/A

X

INCOMPATIBILITY (MATERIALS TO AVOID)

Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS

Oxides of sulfur, carbon and nitrogen, oxygen gas

HAZARDOUS POLYMERIZATION**CONDITIONS TO AVOID****MAY OCCUR**

N/A

WILL NOT OCCUR

X

SECTION VII - SPILL OR LEAK PROCEDURES**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED - WEAR PROTECTIVE CLOTHING. NEVER DISCHARGE DIRECTLY INTO SEWERS OR WATERWAYS**

Scoop up with steel shovel. Flush remaining material to chemical drain with water.

WASTE DISPOSAL METHOD - ALWAYS CHECK AND COMPLY WITH GOVERNMENT DISPOSAL REGULATIONS

Flush to chemical drain. Check government disposal regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION**RESPIRATORY PROTECTION (SPECIFY TYPE)**

Not normally required

VENTILATION**LOCAL EXHAUST**

N/A

SPECIAL

N/A

MECHANICAL (GENERAL)

X

OTHER

N/A

PROTECTIVE GLOVES

Rubber

EYE PROTECTION

Safety goggles

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX - SPECIAL PRECAUTIONS**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING**

Store in cool, dry area away from open flame, sparks and other sources of ignition.

OTHER PRECAUTIONS - AVOID EYE AND SKIN CONTACT. ALWAYS WASH CLOTHING BEFORE RE-USE

Wash thoroughly after handling.

PREPARED BY: MacDermid Incorporated**DATE:** 9/18/87

13501

SAFETY & WARNING INFORMATION

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Industrial Hygiene - General Requirements

(To be attached to every MacDermid Material Safety Data Sheet.)

JUN 10 1988

INDUSTRIAL HYGIENE

INGESTION

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SKIN CONTACT

Skin contact should be prevented through the use of impervious clothing, gloves and footwear. A face shield should be worn when use conditions could result in exposure to the material.

EYE CONTACT

Eye contact should be prevented through the use of chemical safety glasses, goggles or face shield.

INHALATION

This material should only be handled in open or well-ventilated areas. Where adequate ventilation is not available and there is possibility of vapor, aerosol or mist generation, control of inhalation can be achieved through the use of a NIOSH-approved, half-face-piece cartridge, air-purifying respirator.

General Storage Requirements for Hazardous Materials

CORROSIVE MATERIALS

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FLAMMABLE LIQUIDS

Keep Flammable Liquids in a segregated area, preferably outside of your facility or in a Flammable Liquid storage cabinet.

DOUBLE LABELED MATERIALS

(Example: Corrosive Liquid, Poisonous NOS). Primary hazard is Corrosive, secondary hazard is Poison. Consider both hazards in storing the material. In this example, do not store near Flammable Solids, Oxidizing or Cyanide Bearing materials because of the corrosive element. Preferably keep double labeled materials separate from all other diamond labeled materials.

ACIDS/ALKALINES

Acid bearing material should be stored separate from Alkaline bearing material.

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 **MacDermid**
CORPORATION
(202) 576-5700

 **EMERGENCY DIRECTORY ASSISTANCE**

(313) 644-5626

 mfsa

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PMC 1531

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

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MAR 24 1981

Previous info 3/27/69

G. E. PARSONS

SECTION I

MANUFACTURER'S NAME Enthone, Inc. J.A. Zehnder		EMERGENCY TELEPHONE NO. 203-934-8611
ADDRESS (Number, Street, City, State, and ZIP Code) Box 1900 New Haven, Conn. - 06508		
CHEMICAL NAME AND SYNONYMS N.A.	TRADE NAME AND SYNONYMS Enstrip S	
CHEMICAL FAMILY N.A.	FORMULA N.A.	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
No known hazardous ingredients					

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	-	SPECIFIC GRAVITY (H ₂ O=1)	-
VAPOR PRESSURE (mm Hg.)	-	PERCENT VOLATILE BY VOLUME (%)	-
VAPOR DENSITY (AIR=1)	-	EVAPORATION RATE (_____ =1)	-
SOLUBILITY IN WATER	Soluble		
APPEARANCE AND ODOR Off-white powder with slight aromatic odor.			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	None	FLAMMABLE LIMITS	Lower	Upper
EXTINGUISHING MEDIA	in a fire - CO ₂ , Foam.	Auto ignition point	of 645°F	
SPECIAL FIRE FIGHTING PROCEDURES If water is used, copious flooding is necessary to avoid spreading of fire.				
UNUSUAL FIRE AND EXPLOSION HAZARDS May ignite upon heating. Dust explosion and/or fire possible if exposed to spark. Explosibility of dust = 0.2 oz/ft ³ at max. of 80 psig.				

COPY TO ENTHONE 1746

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

N.A.

EFFECTS OF OVEREXPOSURE

Irritation of skin, eyes, mucous membranes.

EMERGENCY AND FIRST AID PROCEDURES

External - Wash with much water; report to doctor.

Internal - Induce vomiting, drink much water; report to doctor.

SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE shelf
life

1 yr.

INCOMPATIBILITY (Materials to avoid)

Moisture reducers

HAZARDOUS DECOMPOSITION PRODUCTS

in a fire - nitroaromatic compounds, nitric acid, toxic nitrogen and sulfur oxides.

HAZARDOUS
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

unless subjected to conditions noted.

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Scoop up into steel container, but avoid spark; or, flush away with water.

WASTE DISPOSAL METHOD

Dispose of in landfill, but avoid contact with oxidizable

materials (combustibles); or, add to large volume of reducer solution (ferrous salt), acidify with 3 M H_2SO_4 ; after reduction is complete, neutralize with soda ash.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Type for caustic mist.

VENTILATION

LOCAL EXHAUST Yes, if general area
ventilation is poor.

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

Yes, rubber

EYE PROTECTION

Yes, goggles

OTHER PROTECTIVE EQUIPMENT

Apron, boots

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep dry. Store indoor at max. of 110°F.

Avoid contact with moisture, reducers (combustibles).

OTHER PRECAUTIONS

Exothermic reaction with water, mild reducing agents. Violent reaction with strong reducing agents (especially if moisture present.)

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UTCIHL JUN 5 1986

MATERIAL SAFETY DATA SHEET

(R) 4/17/86 INDUSTRIAL HYGIENE

CODE 13501

SECTION I

Manufacture's Name MacDermid Incorporated	EMERGENCY TELEPHONE 203-575-5700
ADDRESS (Number, Street, City, State, Zip Code) 526 Huntingdon Avenue Waterbury, CT. 06720	MFSA EMERGENCY 24 HOUR HOTLINE: (313) - 644 - 5626
CFR-49 - DOT Proper Shipping Name Non Hazardous	
CHEMICAL NAME AND SYNONYMS N/A	TRADE NAME AND SYNONYM Metex Strip Aid
CHEMICAL FAMILY Anti-Reducing Agent	FORMULA Mixture

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVE & SOLVENTS	%	TLV (UNITS)	ALLOYS & METALLIC COATINGS	%	TLV (UNITS)
PIGMENTS	N/A		BASE METAL	N/A	
CATALYST	"		ALLOYS	"	
VEHICLE	"		METALLIC COATINGS	"	
SOLVENTS	"		FILLER METAL PLUS OR CORE FLUX	"	
ADDITIVES	"		OTHERS	"	
OTHERS	"				
HAZARDOUS MIXTURES OR OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (UNITS)
Salt of nitro aryl sultronic acid				100	

SECTION III - PHYSICAL DATA

BOILING POINT (F)	N/A	SPECIFIC GRAVITY (H ₂ O = 1)	N/A
VAPOR PRESSURE (MM. HG.)	0	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)	N/A	EVAPORATION RATE (= 1)	N/A
SOLUBILITY IN WATER	Appreciable		
APPEARANCE AND ODOR Pale yellow to tan powder - odorless			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED) N/A	FLAMMABLE LIMITS N/A	LEL	UEL
EXTINGUISHING MEDIA Waterspray, CO ₂ , alcohol, foam, dry chemical.			
SPECIAL FIRE FIGHTING PROCEDURES If material is smoldering, spread burning material out thinly and douse with water.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Material is an oxygen donor and can support combustion.			

PMC 1531

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Not established for product.

EFFECTS OF OVEREXPOSURE-UNLESS OTHERWISE STATED, CHRONIC OR LONG-TERM HEALTH EFFECTS UNKNOWN!

Possible slight irritation to eyes, skin and mucous membranes. May be harmful if swallowed. Do not take internally.

EMERGENCY AND FIRST AID PROCEDURES

Eyes: Flush with water for 15 minutes. Contact physician.

Skin: Flush with water.

Internal: Give water, induce vomiting, contact physician.

SECTION VI - REACTIVITY DATA

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATIBILITY (MATERIALS TO AVOID)

Strong Oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS

Oxides of sulfur, carbon and nitrogen, oxygen gas

HAZARDOUS POLYMERIZATION

CONDITIONS TO AVOID

MAY OCCUR

WILL NOT OCCUR

X

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Scoop up with steel shovel. Flush remaining material to drain with water.

WASTE DISPOSAL METHOD

Flush to chemical drain. Check government disposal regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE)

Not normal required.

VENTILATION

LOCAL EXHAUST

N/A

SPECIAL

N/A

MECHANICAL (GENERAL)

X

OTHER

N/A

PROTECTIVE GLOVES

Rubber

EYE PROTECTION

Safety goggles

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in cool, dry area away from open flame, sparks and other sources of ignition.

OTHER PRECAUTIONS

None known

PREPARED BY: Cherrie D. Gillis

DATE: 4/17/86

13501

SAFETY & WARNING INFORMATION

PMC 1531

Industrial Hygiene - General Requirements

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EYE CONTACT

Eye contact should be prevented through the use of chemical safety glasses, goggles or face shield.

INHALATION

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DOUBLE LABELED MATERIALS

(Example: Corrosive Liquid, Poisonous NOS). Primary hazard is Corrosive, secondary hazard is Poison. Consider both hazards in storing the material. In this example, do not store near Flammable Solids, Oxidizing or Cyanide Bearing materials because of the corrosive element. Preferably keep double labeled materials separate from all other diamond labeled materials.

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MacDermid
INCORPORATED

(203) 575-5700

JUN 5 1986

INDUSTRIAL HYGIENE



EMERGENCY DIRECTORY ASSISTANCE

(313) 644-5626

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U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

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OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

PMC 1531
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Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

OCT 9 1980

G. E. PARSONS

Phillip Brothers - Supplier SECTION I

CP #80281

MANUFACTURER'S NAME
Copper Pigment Chemicals
CP Nickel Strip Salt (PMC 1531)

EMERGENCY TELEPHONE NO.
CP: 201 - 636-4300
CHEMTREC: 800 - 429-9300

ADDRESS (Number, Street, City, State, and ZIP Code)
Arbor Street, Sewaren, NJ 07077

CHEMICAL NAME AND SYNONYMS

Proprietary

TRADE NAME AND SYNONYMS

CP Nickel Strip Salts

CHEMICAL FAMILY

Formulation

FORMULA

Proprietary

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS	Not Applicable		BASE METAL	N.A.	
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Nitro Aromatic Sulfonic Acid Soluble Salt					
Inorganic Salt (non-hazardous)					

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N.A.	SPECIFIC GRAVITY (H ₂ O=1) Bulk Density	750 g/l
VAPOR PRESSURE (mm Hg.)	N.A.	PERCENT VOLATILE BY VOLUME (%) (water)	17
VAPOR DENSITY (AIR=1)	N.A.	EVAPORATION RATE (—=1)	N.A.
SOLUBILITY IN WATER @ 20°C	310g/l	pH =	(30% Soln.) 10
APPEARANCE AND ODOR: Yellow crystalline powder.			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	200°F approx. (Abel-Pensky)	FLAMMABLE LIMITS	Let	Uet
EXTINGUISHING MEDIA	CO ₂ or dry chemical preferred.			
SPECIAL FIRE FIGHTING PROCEDURE	Avoid inhaling fumes. Move away from combustibles.			
UNUSUAL FIRE AND EXPLOSION HAZARDS	May emit hazardous NO _x and/or SO _x fumes if heated to decomposition (379°C = 714°F). Potential oxidizer.			

COPY TO LOCAL IAM

1746

MAY 18 '82

SECTION V - HEALTH HAZARD DATA		<i>PMC 1531</i>
THRESHOLD LIMIT VALUE <u>None established</u>		
EFFECTS OF OVEREXPOSURE		
<u>Acute: Dermatitis, eye or nasal irritation.</u>		
<u>Chronic: Anemia possible, others unknown.</u>		
EMERGENCY AND FIRST AID PROCEDURES		
<u>Wash eyes (under lids) 15 min.; see physician. Wash skin with soap & water. If swallowed, give 2 glasses milk or water; induce vomiting. See physician.</u>		

SECTION VI - REACTIVITY DATA			
STABILITY	UNSTABLE	<u>379°C</u>	CONDITIONS TO AVOID <u>Excessive heat</u>
	STABLE		
INCOMPATIBILITY (Materials to avoid) <u>Acid, ammonium salts</u>			
HAZARDOUS DECOMPOSITION PRODUCTS <u>Oxides of sulfur and/or nitrogen</u>			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	<u>X</u>	

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
<u>Sweep up for recycle or disposal as organic chemical waste.</u>	
WASTE DISPOSAL METHOD	
<u>Combustion or burial in site having local, state and federal approval for aromatic organics.</u>	

SECTION VIII - SPECIAL PROTECTION INFORMATION			
RESPIRATORY PROTECTION (Specify type) <u>Dust respirator</u>			
VENTILATION	LOCAL EXHAUST	<u>Desirable</u>	SPECIAL
	MECHANICAL (General)		OTHER
PROTECTIVE GLOVES <u>Rubber</u>		EYE PROTECTION <u>Goggles</u>	
OTHER PROTECTIVE EQUIPMENT <u>Clean work clothes</u>			

SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	
<u>Store in cool place away from organics.</u>	
<u>Keep container tightly closed. Avoid personal contact.</u>	
OTHER PRECAUTIONS	
<u>Probably not an acute systemic poison, but structure suggests chronic toxicity possible.</u>	

MAY 1982

474-

1250 Terminal Tower, Cleveland, Ohio 44113, 216/621-6425

MATERIAL SAFETY DATA SHEET

Product Name:	20 XL	Emergency Phone No.:	216/441-4900
Plant Address:	2910 Harvard Avenue	Cleveland, OH 44109	Chemtrec Phone No. 800/424-9300
Prepared By:	TSCA Coordinator	Issue Date:	2/82
		Revised Date:	2nd 2/87

Material	%	TLV	C.A.S. #	Suspect Carcinogen
Nickel Sulfate	1	0.1*	7786-81-4	NO
		mg/m ³		
RECEIVED				
APR 8 - 1988				
INDUSTRIAL HYGIENE				
*As Ni				

Boiling Point:	>100°C	Freezing Point:	UK	Specific Gravity:	1.04	pH:	5-6
Vapor Pressure at 20° C:	UK	Vapor Density (Air = 1):	UK	% Volatiles by Volume:	90	Odor:	None
Evaporation Rate (Butyl Acetate = 1)				<1			
				Solubility in Water:			
				Complete			
Appearance and Form:							
Viscous blue liquid							

Flash Point:	NA	Flammable Limits in Air: Upper: NA Lower:
Test Method:	NA	
Extinguishing Media:	NA	
Special Fire Fighting Procedures:	NA	
Unusual Fire and Explosion Hazards:	None	
DOT Classification:	NA	Note: UK = Unknown NA = Not Applicable

HEALTH HAZARD DATA

Effects of Overexposure and Primary Entries to Body:

Primary entry through cuts.
May irritate skin or eyes.

Emergency and First Aid Procedures:

Wash skin with soap and water.
Flush eyes with water for at least 15 minutes.
If any irritation persists, see a physician.

REACTIVITY DATA

☒ Stable☐ Unstable

Conditions to Avoid:

Incompatibility — Materials to Avoid:

None known

Hazardous Decomposition Products:

None known

Hazardous Polymerization:

☐ May Occur☒ Will Not Occur

SPILL OR LEAK PROCEDURES

Spills:

Flush with water.

Waste Disposal Methods:

Remove nickel by best method.
Take to an EPA approved disposal facility.
Remaining solution can be sewered.

Follow all Local, State and Federal regulations.

SPECIAL PROTECTION INFORMATION

Respirator:

Not normally required.

Ventilation:

Mechanical

Gloves:

Rubber

Eye and Face:

Chemical goggles

Other:

Sufficient to prevent skin contact.

Handling and Storage:

Normal handling and storing.

THIS PRODUCT SAFETY DATA SHEET IS OFFERED SOLELY FOR YOUR INFORMATION, CONSIDERATION AND INVESTIGATION.

McGEAN-ROHCO, INC. PROVIDES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, AND ASSUMES NO RESPONSIBILITY FOR ACCURACY OR COMPLETENESS OF THE DATA CONTAINED HEREIN.

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Occupational Safety and Health Administration

Form Approved FEB 5 1980
OMB No. 44-R1387

G. E. PARSONS

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

PMC 1541

SECTION I

MANUFACTURER'S NAME Oxy Metal Industries Corporation		EMERGENCY TELEPHONE NO. (313) 497-9100
ADDRESS (Number, Street, City, State, and ZIP Code) 21441 Hoover Road Warren, Michigan 48089		
CHEMICAL NAME AND SYNONYMS Cadmium Brightener #53		TRADE NAME AND SYNONYMS Same
CHEMICAL FAMILY Proprietary	FORMULA Proprietary	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS	No	No	BASE METAL	No	No
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIONAL INGREDIENTS			OTHERS		
			WATER = 89%		

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
An aqueous solution containing a nickel salt as Ni,	< 1.0	1 mg/M ³
Carbohydrate derivatives <i>Sugar</i>	< 10	NA
A fungicide	< 0.001	NA
and an organic wetting agent	X	X

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	greater than 200°	SPECIFIC GRAVITY (H ₂ O=1)	greater than 1
VAPOR PRESSURE (mm Hg.)	NA	PERCENT VOLATILE BY VOLUME (%)	NA
VAPOR DENSITY (AIR=1)	NA	EVAPORATION RATE (_____=1)	NA
SOLUBILITY IN WATER	Soluble		X
APPEARANCE AND ODOR light green slurry, odorless			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	None	FLAMMABLE LIMITS	Lel	Uel
		None	X	X
EXTINGUISHING MEDIA None. Product does not burn.				
SPECIAL FIRE FIGHTING PROCEDURES None				
UNUSUAL FIRE AND EXPLOSION HAZARDS None known				

PMC 1541

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

None known or established.

EFFECTS OF OVEREXPOSURE

May cause irritation.

EMERGENCY AND FIRST AID PROCEDURES

Flush eyes and skin with water. For eyes get medical attention.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid)			
Strong oxidizers.			
HAZARDOUS DECOMPOSITION PRODUCTS			
Unknown			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Flush away with water.

WASTE DISPOSAL METHOD

Bury in impervious soil in such manner that rain water run-off will not contaminate sub-surface waters.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)			
None needed.			
VENTILATION	LOCAL EXHAUST	No	SPECIAL
	MECHANICAL (General)	No	OTHER
		No	No
PROTECTIVE GLOVES		rubber gloves	EYE PROTECTION
			chemical safety goggles
OTHER PROTECTIVE EQUIPMENT			
none needed			

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	
Avoid excessive skin contact. Do not permit ambient temperature to exceed 110°F or fall below 32°F.	
OTHER PRECAUTIONS	
For Industrial Use Only. - Do Not Take Internally.	

DOT Class: Not Regulated, Non-Hazardous
Label: Compounds, Electroplating additive

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NPVLA 6-70

MATERIAL SAFETY DATA SHEET

(Approved by U. S. Department of Labor "Essentially Similar" to form LSB-005-4)

Section I	
MANUFACTURER'S NAME Rohco, Inc.	
STREET ADDRESS 3203 West 71st Street	
CITY, STATE, AND ZIP CODE Cleveland, Ohio 44102	
EMERGENCY TELEPHONE NO. (216) 651-7300	
CHEMICAL NAME AND SYNONYMS	TRADE NAME Rohco 20XL
CHEMICAL FAMILY	FORMULA

Section II - HAZARDOUS INGREDIENTS					
PAINTS, PRESERVATIVES, & SOLVENTS					
PIGMENTS	%	TLV (Units)	SOLVENTS	%	TLV (Units)
CATALYST			ADDITIVES		
VEHICLE			OTHERS		
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Contains about 2% Nickel Sulfate				1 mg/m ³	as Ni
Contains no other ingredients known to be hazardous.					
Our plant experience with the concentrated ingredients has shown no hazardous effects.					

Section III - PHYSICAL DATA			
BOILING POINT (°F.)	205-210° F.	SPECIFIC GRAVITY (H ₂ O=1)	1.04
VAPOR PRESSURE (mm Hg.)	about 18 mm	PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)	about 0.62	EVAPORATION RATE (.....ether...=1)	Less than 1
SOLUBILITY IN WATER	Complete		
APPEARANCE AND ODOR	Viscous blue liquid, odorless.		

Section IV - FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (METHOD USED)	Not flammable.	FLAMMABLE LIMITS	Let Uel
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES	COPY TO LOCAL IAM		
UNUSUAL FIRE AND EXPLOSION HAZARDS	MAY 18 '82	1746	

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Section V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Product may be slightly irritating to skin and eyes.

EMERGENCY AND FIRST AID PROCEDURES

Skin contact: Wash affected area well with soap and water.

Eye contact: Flush eyes with water at least 15 minutes and get medical attention if irritation persists.

Section VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATIBILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

Section VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Cover with soda ash, mix and scoop into a beaker of water.

Neutralize with 6 M HCl and wash down drain with excess water.

WASTE DISPOSAL METHOD

Add slowly to a large container of water. Stir in slight excess of soda ash. Let stand 24 hours. Decant or siphon into another container and neutralize with 6 M HCl before washing down drain with large excess of water. The sludge may be added to land fill.

Section VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

OTHER

To keep below TLV

PROTECTIVE GLOVES

Recommended

EYE PROTECTION

Goggles Recommended

OTHER PROTECTIVE EQUIPMENT

Section IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store above 50° F. to keep product from freezing.

OTHER PRECAUTIONS

COPY TO LOCAL I.A.M.

MAY 18 '82

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OMI INTERNATIONAL CORPORATION
21441 Hoover Road, Warren, MI 48089

Page 1 of 2
24-Hour EMERGENCY Phone Number

REVISION: 4/21/88

MATERIAL SAFETY DATA SHEET

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May be used to comply with OSHA's Hazard Communication Standard,
29CFR 1910.1200. Standard must be consulted for specific requirements.

Section I

JUN 10 1988

Product Trade Name: UDYLITE: BRY-CAD® 53 Brightener

INDUSTRIAL HYGIENE

Proprietary Formulation

Hazardous Components

Section II

TLV OSHA Listed: NTP/IARC/OSHA Z/EPA

CAS No.

Percentage

ACGIH

Carcinogen *Hazardous *Toxic *Irritant *Corrosive *Flammable

Nickel Compound/

Soluble as Ni

7440-02-0

0.6

0.1 mg/m³

NTP anticipated human
carcinogen

IARC probable human
carcinogen (2A)

OSHA Z

Physical Data

Section III

Appearance and Odor: Light green liquid with no odor.

Solubility in Water:

Negligible <0.1%

Slight 0.1-1.0%

Moderate 1.0-10.0%

Appreciable >10.0%

Complete(all proportions) X

Boiling Point

N/A

Vapor Pressure

N/A

Percent Volatile by Volume

N/A

Evaporation Rate

N/A

Specific Gravity

1.03

pH

5.5

Fire and Explosion Hazard Data

Section IV

Flash Point

None

Flammable/Explosive Limits LEL N/A UEL N/A

(method used)

NFPA Code (0-4)

Health 1 Flammability 0 Reactivity 0

Extinguishing Media

Product will not burn.

Special Fire-

Use media suitable for surrounding fire.

Fighting Procedures

Unusual Fire and

None known.

Explosion Hazards

Health Hazard Data

Section V

Threshold Limit Value

None known or established.

Effects of Overexposure:

Acute:

May cause eye and skin irritation.

Chronic:

Repeated contact may result in rash, "nickel itch."

Principal Route of Exposure: Contact.

Emergency First Aid Procedures:

Eye

Flush with a directed stream of water for 15 minutes. Seek medical attention.

Skin

Wash with soap and water.

Inhalation

Remove to fresh air.

Swallowing

Drink water (2-3 glasses) to dilute. Seek medical attention.

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OMI International Corporation Material Safety Data Sheet

Page 2 of 2

Product Trade Name BRY-CAD® 53 Brightener

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Reactivity DataSection VI

INDUSTRIAL HYGIENE

Stability: Stable X Unstable _____Incompatibility
(Materials to Avoid): None knownHazardous Decomposition
Products: NoneHazardous Polymerization May Occur Will Not Occur XSpill or Leak ProceduresSection VII

Steps to be taken in case material is released or spilled:

Contain and place into a container suitable for transportation to a licensed waste treatment facility.Waste Disposal Method Licensed waste treatment facility.EPA I.D. Number N/A RQ: N/ASpecial Protection InformationSection VIII

Ventilation:

Local Exhaust Yes Respiratory Protection No

Protective Clothing:

Gloves butyl rubber or neoprene Boots NoChemical Safety Goggles Yes Other: NoFull Face Shield NoNote: Eye Fountain and Safety Shower must always be available.Special PrecautionsSection IXHandling & Storage No special requirements.Other NoneShipping InformationSection XDOT Proper Shipping Name NoneHazard Class NoneDOT Label(s) NoneIATA Class: N/APacking Group: N/AIMDGC Class: N/APacking Group: N/APrepared by: Carl N. GilsdorfDate 4/21/88

Manager, Quality Assurance

This form has been prepared and reviewed by technically knowledgeable people and is based on information OMI International Corporation believes to be reliable. This information is provided solely to provide health and safety guidelines and is not to be intended for any other purpose.

ARD:df(R) 8/28/81

U. S. DEPARTMENT OF LABOR
WAGE AND LABOR STANDARDS ADMINISTRATION
Bureau of Labor Standards

PMC 1556

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MATERIAL SAFETY DATA SHEET

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SECTION I

MANUFACTURER'S NAME MACDERMID, INC.		EMERGENCY TELEPHONE NO. 203-754-6161
ADDRESS (Number, Street, City, State, and ZIP Code) 526 HUNTINGDON AVENUE, WATERBURY, CONNECTICUT 06720		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Metex Non Pitter N-17 No. 165
CHEMICAL FAMILY Surfactant	FORMULA	

SECTION II HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS	-		BASE METAL	-	
CATALYST	-		ALLOYS	-	
VEHICLE	-		METALLIC COATINGS	-	
SOLVENTS	-		FILLER METAL PLUS COATING OR CORE-FLUX	-	
ADDITIVES	-		OTHERS	-	
OTHERS	-				
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Potassium Hydroxide				<2.0	2mg/M

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	> 212	SPECIFIC GRAVITY (H ₂ O=1)	1.019
VAPOR PRESSURE (mm Hg.)	Aqueous	PERCENT VOLATILE BY VOLUME (%)	-
VAPOR DENSITY (AIR=1)	-	EVAPORATION RATE (_____=1)	-
SOLUBILITY IN WATER	Complete		
APPEARANCE AND ODOR	Clear, colorless liquid - no odor.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	Non Flammable	FLAMMABLE LIMITS	NA	Let	Uet
EXTINGUISHING MEDIA	Compatible with waterspray, CO ₂ , dry chemical, foam, Halon.				
SPECIAL FIRE FIGHTING PROCEDURES	None				
UNUSUAL FIRE AND EXPLOSION HAZARDS	None				

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SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	Not established for product. See Section II.
EFFECTS OF OVEREXPOSURE	Irritation to eyes, skin and mucous membranes.
EMERGENCY AND FIRST AID PROCEDURES	
	Eyes - Flush with water for 15 minutes. Contact physician.
	Skin - Flush with water.
	Internal - Give water, contact physician.

SECTION VI REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid)	Strong acids.		
HAZARDOUS DECOMPOSITION PRODUCTS	Oxides of carbon and nitrogen.		
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Flush with water to drain.
WASTE DISPOSAL METHOD	Adjust pH to 6 to 8 with dilute acid and discard.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)	Not normally required.	
VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General) X	OTHER
PROTECTIVE GLOVES	Rubber	EYE PROTECTION Goggles
OTHER PROTECTIVE EQUIPMENT	Rubber apron.	

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Keep in closed containers in a cool storage location.
OTHER PRECAUTIONS	

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U. S. DEPARTMENT OF LABOR
WAGE AND LABOR STANDARDS ADMINISTRATION
Bureau of Labor Standards
MATERIAL SAFETY DATA SHEET

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Code: 13314

SECTION I	
MANUFACTURER'S NAME MACDERMID, INC.	EMERGENCY TELEPHONE NO. 203-754-6161
ADDRESS (Number, Street, City, State and ZIP Code) 526 HUNTINGDON AVENUE, WATERBURY, CONNECTICUT 06720	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS Metex Stripper X-343
CHEMICAL FAMILY	FORMULA

SECTION II HAZARDOUS INGREDIENTS					
PAINTS, PRESERVATIVES, & SOLVENTS		TLV (Units)	ALLOYS AND METALLIC COATINGS		TLV (Units)
PIGMENTS	Not Applicable		BASE METAL	Not Applicable	
CATALYST	" "		ALLOYS	" "	
VEHICLE	" "		METALLIC COATINGS	" "	
SOLVENTS	" "		FILLER METAL PLUS COATING OR CORE FLUX	" "	
ADDITIVES	" "		OTHERS	" "	
OTHERS	" "				
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					TLV (Units)
Telephone Conversation: Sodium salts					
Other materials: Proprietary					

SECTION III PHYSICAL DATA			
BOILING POINT (°F.)	NA	SPECIFIC GRAVITY (H ₂ O=1)	--
VAPOR PRESSURE (mm Hg.)	0	PERCENT VOLATILE BY VOLUME (%)	0
VAPOR DENSITY (AIR = 1)	NA	EVAPORATION RATE (_____=1)	NA
SOLUBILITY IN WATER	appreciable		
APPEARANCE AND ODOR	Off-white to tan powder		

SECTION IV FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (Method used)	N.A.	FLAMMABLE LIMITS	Lel: Uel:
EXTINGUISHING MEDIA	Water spray, CO ₂ , alcohol foam, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES	If material is smoldering, spread burning material out thin and douse with water.		
UNUSUAL FIRE AND EXPLOSION HAZARDS	Material is an oxygen donor and can support combustion.		
COPY TO LOCAL IAM			

COPY TO LOCAL I.A.M.

MAY 18 '82

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PMC 157

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Not established for product. Acute toxicity of low order.

EFFECTS OF OVEREXPOSURE

Possible slight irritation to skin.

EMERGENCY AND FIRST AID PROCEDURES

Eyes - Flush with water for 15 minutes. Contact physician. Skin - Flush with water.

SECTION VI REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATIBILITY (Materials to avoid)

Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS

Oxides of sulfur, carbon and nitrogen, oxygen gas.

HAZARDOUS
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Flush with water to drain.

WASTE DISPOSAL METHOD

Flush with water to drain.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Not normally required.

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

X

OTHER

PROTECTIVE GLOVES:

Rubber

EYE PROTECTION

Safety glasses

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in dry area away from open flame.

OTHER PRECAUTIONS

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PMC 1531

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CODE 13501

9/18/87-

INDUSTRIAL HYGIENE

SECTION 1

Manufacturer's Name MacDermid Incorporated			EMERGENCY TELEPHONE 203-575-5700		
ADDRESS (Number, Street, City, State, Zip Code) 526 Huntington Avenue Waterbury, CT. 06708			MFSA EMERGENCY 24 HOUR HOTLINE: (Medical) (313) - 644 - 5626		
CFR-49 - DOT Proper Shipping Name Non Hazardous					
CHEMICAL NAME AND SYNONYMS N/A			TRADE NAME AND SYNONYMS Metex Strip Aid		
CHEMICAL FAMILY Salt of Sulfonic Acid			FORMULA Mixture		
SECTION II - HAZARDOUS INGREDIENTS					
PAINTS, PRESERVATIVE & SOLVENTS	Z N/A	TLV (UNITS)	ALLOYS & METALLIC COATINGS	Z N/A	TLV (UNITS)
PIGMENTS	"		BASE METAL	"	
CATALYST	"		ALLOYS	"	
VEHICLE	"		METALLIC COATINGS	"	
SOLVENTS	"		FILLER METAL PLUS OR CORE FLUX	"	
ADDITIVES	"		OTHERS	"	
OTHERS	"				
HAZARDOUS MIXTURES OR OTHER LIQUIDS, SOLIDS, OR GASES Salt of sulfonic acid (27215-71-0)				Z 100	TLV (UNITS) Not listed
SECTION III - PHYSICAL DATA					
BOILING POINT (°F)	N/A	SPECIFIC GRAVITY (H ₂ O = 1)		N/A	
VAPOR PRESSURE (MM. HG.)	0	PERCENT VOLATILE BY VOLUME (%)		0	
VAPOR DENSITY (AIR = 1)	N/A	EVAPORATION RATE (= 1)		N/A	
SOLUBILITY IN WATER	Appreciable				
APPEARANCE AND ODOR Pale yellow to tan powder - odorless					
SECTION IV - FIRE AND EXPLOSION HAZARD DATA					
FLASH POINT (METHOD USED) Non-flammable		FLAMMABLE LIMITS N/A		LEL	UEL
EXTINGUISHING MEDIA Waterspray, CO ₂ , alcohol, foam, dry chemical					
SPECIAL FIRE FIGHTING PROCEDURES If material is smoldering, spread burning material out thinly and douse with water. Wear self-contained breathing apparatus.					
UNUSUAL FIRE AND EXPLOSION HAZARDS Material is an oxygen donor and can support combustion.					

SECTION V - HEALTH HAZARD DATA**THRESHOLD LIMIT VALUE**

Not established for product.

EFFECTS OF OVEREXPOSURE-UNLESS OTHERWISE STATED, CHRONIC OR LONG-TERM HEALTH EFFECTS UNKNOWN
Possible slight irritation to eyes, skin and mucous membranes.**EMERGENCY AND FIRST AID PROCEDURES****EYES:** Flush with water for 15 minutes. Contact physician.**SKIN:** Flush with water.**INTERNAL:** Give water. Do not induce vomiting. Contact physician.**INHALATION:** Remove to fresh air.**SECTION VI - REACTIVITY DATA****UNSTABLE****CONDITIONS TO AVOID****STABLE**

N/A

X

INCOMPATIBILITY (MATERIALS TO AVOID)

Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS

Oxides of sulfur, carbon and nitrogen, oxygen gas

HAZARDOUS POLYMERIZATION**CONDITIONS TO AVOID****MAY OCCUR**

N/A

WILL NOT OCCUR

X

SECTION VII - SPILL OR LEAK PROCEDURES**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED - WEAR PROTECTIVE CLOTHING. NO****DISCHARGE DIRECTLY INTO SEWERS OR WATERWAYS**

Scoop up with steel shovel. Flush remaining material to chemical drain with water.

WASTE DISPOSAL METHOD - ALWAYS CHECK AND COMPLY WITH GOVERNMENT DISPOSAL REGULATIONS

Flush to chemical drain. Check government disposal regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION**RESPIRATORY PROTECTION (SPECIFY TYPE)**

Not normally required

VENTILATION**LOCAL EXHAUST**

N/A

SPECIAL

N/A

MECHANICAL (GENERAL)

X

OTHER

N/A

PROTECTIVE GLOVES

Rubber

EYE PROTECTION

Safety goggles

OTHER PROTECTIVE EQUIPMENT

Protective clothing

SECTION IX - SPECIAL PRECAUTIONS**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING**

Store in cool, dry area away from open flame, sparks and other sources of ignition.

OTHER PRECAUTIONS - AVOID EYE AND SKIN CONTACT. ALWAYS WASH CLOTHING BEFORE RE-USE

Wash thoroughly after handling.

PREPARED BY: MacDermid Incorporated**DATE:** 9/18/87

13501

Axten Cross C.
Supplier

Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

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PMC 1601
PMC 1601
EC - Other

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Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

AUG 19 1980

SECTION I

PMC 1607 G. E. PARSONS

Allied Chemical Corporation
Specialty Chemicals Division

EMERGENCY TELEPHONE NO.
(201) 455-2000

ADDRESS

P.O. Box 1087R, Morristown, NJ 07960

CHEMICAL NAME AND SYNONYMS

Sodium Hydroxide; Caustic Soda; Lye

TRADE NAME AND SYNONYMS

Sodium Hydroxide.

CHEMICAL FAMILY

Alkali

FORMULA

NaOH

Flake / Pellet

SECTION II - HAZARDOUS INGREDIENTS N.A.

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Nickel--soluble compounds (as Ni)				<0.001	0.1 mg/m ³

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	2532	SPECIFIC GRAVITY (H ₂ O=1) (solid)	2.13
VAPOR PRESSURE (mm Hg.)	Negligible @ ambient	PERCENT VOLATILE BY VOLUME (%)	Negligible @ ambient
VAPOR DENSITY (AIR=1)	N.A. (vapor " @ ")	EVAPORATION RATE (" @ ")	
SOLUBILITY IN WATER	Appreciable		
APPEARANCE AND ODOR	White flakes or pellets with no odor.		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	None	FLAMMABLE LIMITS	LeI	UeI
EXTINGUISHING MEDIA	Flood with water, using care not to splatter or splash.			
SPECIAL FIRE-FIGHTING PROCEDURES	Wear self-contained breathing apparatus approved by NIOSH and full protective clothing.			
UNUSUAL FIRE AND EXPLOSION HAZARDS	Will release flammable and explosive hydrogen gas when in contact with aluminum, lead, tin, zinc, and their alloys. Contact with water or moisture may generate sufficient heat to ignite combustible materials.			

PAGE 11

DOT Class Corrosive Material DOT Label Corrosive

Supersedes - new

Form OSHA-20
Rev. Nov., 1977

MAY 18 82

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SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

2mg/M³ (ceiling)

EFFECTS OF OVEREXPOSURE

Skin: may cause severe burns on contact.
Eyes: rapidly causes severe damage to eyes.

Dust or mist inhalation: May damage entire respiratory tract.

EMERGENCY AND FIRST AID PROCEDURES Speed in removal of caustic is of primary importance. Skin: flush with large amounts of water. Continue washing up to 1 or 2 hrs. or until medical help arrives. Eyes: irrigate immediately with copious amounts of water for at least 15 minutes. Get physician's treatment at once for eye and skin burns and when inhaled.

SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATIBILITY (Materials to avoid)

See page 3

HAZARDOUS DECOMPOSITION PRODUCTS

See hydrogen generation, Section IV

HAZARDOUS
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED. Immediately sweep up carefully and remove, providing personal protection and avoiding contact with metals. Dissolve and flush away remainder, keeping out of sewers. In the event of hydrogen generation, evacuate and ventilate with explos proof arrangement. Dilute acid, preferably acetic acid, may be used carefully to neutralize final caustic traces.

WASTE DISPOSAL METHOD

If disposal regulations permit discharge of neutral solutions, dissolve in water, cool and neutralize carefully with dilute acid, such as acetic. Then flush to sewer with lots of water. Disposal by a licensed contractor may otherwise be needed.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

If misty or dusty, use special (mechanical) filter respirator.*

VENTILATION

LOCAL EXHAUST

SPECIAL

As necessary to eliminate dust or mist.

MECHANICAL (General)

OTHER

Adequate in absence of dust or mist.

PROTECTIVE GLOVES

Rubber, neoprene or NBR

EYE PROTECTION

Chemical Safety Goggles

OTHER PROTECTIVE EQUIPMENT

Face shields, hard hats, rubber aprons, boots, or shoes and rubber clothing as necessary to prevent skin contact.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Do not mix hot water with caustic soda. In diluting, add caustic carefully to cold water with stirring as heat is evolved. Heat is also evolved in neutralizing caustic. Use care to avoid spattering of caustic solutions.

OTHER PRECAUTIONS

For further details see MCA Chemical Safety Data Sheet SD-9 on Caustic Soda available from the Manufacturing Chemists Association, 1825 Connecticut Ave., N.W. Washington, D.C. 20009 (19 Precautions listed apply also to aqueous solutions.

PAGE (2) *If hydrogen is being generated, use hose mask or self-contained breathing apparatus.

Form OSHA
Rev. Nov.

F.C.H.

1746
MAY 18 '82

PMC 1601

PMC 1601

UTC IHL 16

DATE: 9/84
PMC 1601
Emergency Phone No.
(315) 487-4700

Axton-Cross Co.

MATERIAL SAFETY DATA

FOR
CAUSTIC POTASH DRY

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APR 4 1986

INDUSTRIAL ENGINE

SECTION I MATERIAL IDENTIFICATION

CHEMICAL NAME: Potassium Hydroxide - Solid
SYNONYMS: Potassium Hydrate, Caustic Potash, Potassa, Lye
TRADE NAME & SYNONYMS: Potassium Hydroxide, Dry, Solid, Flake, Anhydrous
CHEMICAL FORMULA: KOH - 85% and 90%
C.A.S. NO.: 1310583
D.O.T. HAZARD CLASS: Corrosive Class 8 RQ: 1000 lbs., 454 Kg.
D.O.T. IDENTIFICATION NO.: UN 1813
D.O.T. SHIPPING NAME: Potassium Hydroxide, Dry, Solid, Flake
CHEMICAL FAMILY: Alkali
PACKAGING: R-35 S-2, 26, 37, 38, 39 D.O.T. EMERGENCY GUIDE NO. 60
LABELING: Placard corrosive NFPA REGISTRY: 3-0-1

SECTION II INGREDIENTS & HAZARDS

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS OR GASES: This material reacts violently with acids, halogenated hydrocarbons, nitrocarbons and trichloroethylene. Anhydrous KOH can slowly pick up moisture from the atmosphere and react with carbon dioxide from air to form potassium carbonate. It also reacts with aluminum, tin and zinc in presence of moisture.
INGREDIENTS: 85 & 90% KOH
Trace impurities
Remainder is water.

SECTION III PHYSICAL DATA

BOILING POINT: 2500°F
VAPOR PRESSURE (mm Hg): @ 1000°C = 40 to 50
VAPOR DENSITY (Air=1): N.A.
SOLUBILITY IN WATER: @ 20°C 52.8% by weight.
APPEARANCE & ODOR: White hygroscopic flake, pellet, brickett, etc., no odor.
SPECIFIC GRAVITY (H2O=1): 2.044
PERCENT VOLATILE BY VOLUME (%): Nonvolatile at room temperature.
EVAPORATION RATE (H2O=1): N.A.
MELTING POINT: 715°F
MOLECULAR WEIGHT: 56.10
This material generates considerable amounts of heat when dissolved in water.

CHEMICALS MATERIAL SAFETY DATA *Pmc 1601*

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: Not combustible.

FLAMMABLE LIMITS: None.

EXTINGUISHING MEDIA: Suitable for surrounding fire. Keep material cool and dry.

SPECIAL FIRE FIGHTING PROCEDURES: None

UNUSUAL FIRE & EXPLOSION HAZARDS: This material can melt and flow when heated to 715°F. Hot molten material will react violently with water resulting in spattering and fuming.

ADDITIONAL INFORMATION: In the molten or liquid state, this material will react with some metals such as aluminum, tin, zinc, etc. to produce flammable hydrogen.

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: TWA - None 2 mg/CU.M. is suggested.

EFFECTS OF OVEREXPOSURE: This is a strong alkali which is destructive to all human tissue. See additional information.

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: Remove from exposure and get medical help.

SKIN: Prolonged washing with tempered water. Burns to be treated by a physician or trained medic.

EYES: Prolonged washing with water - get medical help.

INGESTION: Drink plenty of water or fruit juice. Do not induce vomiting - get prompt medical help.

ADDITIONAL INFORMATION:

INHALATION: Mist or spray can injure or damage the entire respiratory tract.

SKIN: Can cause serious chemical burns.

EYES: Contact can cause severe to permanent injury.

SECTION VI REACTIVITY DATA

STABILITY: Stable under normal conditions.

CONDITIONS TO AVOID: Organic chemicals, nitrocarbons, and halocarbons, also reactive metals such as aluminum, tin and zinc and contact with acids.

INCOMPATIBILITY (MATERIALS TO AVOID): Same as listed above.

HAZARDOUS DECOMPOSITION PRODUCTS: None.

HAZARDOUS POLYMERIZATION (MAY OCCUR/WILL NOT OCCUR): None.

CONDITIONS TO AVOID: When exposed to air, KOH will react with carbon dioxide to form potassium carbonate.

ADDITIONAL INFORMATION: Trichloroethylene will react to form dichloroacetylene which is spontaneously flammable.

MATERIAL SAFETY DATA CAUSTIC POTASH, DRY



PMC 1601

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Shovel up spills and place in sealable containers for recovery or disposal. Delay in clean up will allow absorption of atmospheric moisture and increase problems associated with clean-up. Avoid dusting or body contact. Recover all material possible when in its dry state. Use weak acid to neutralize remaining spillage and flush with water. Confine the spill site, tools and clothing to a small area.

WASTE DISPOSAL METHODS: Preplanning is essential - follow approved disposal procedure or contact your supplier. Follow Federal, State and local regulations to meet legal and technical requirements. Do not dispose of it to sewers or non chemical solids waste sites. Dilute with water, neutralize to a salt solution before disposal to regular outfall.

ADDITIONAL INFORMATION: Safety eyewash/shower station should be located in the handling area.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATOR PROTECTION (SPECIFY TYPE): A Class 2B NIOSH approved particle respirator or dust filter mask should be worn if dust is present.

VENTILATION (LOCAL EXHAUST AND/OR MECHANICAL): Provide adequate ventilation to meet TLV requirement if above suggested limit.

PROTECTIVE GLOVES: Rubber.

EYE PROTECTION: Close fitting (face seal) goggles.

OTHER PROTECTIVE EQUIPMENT: Rubber work boots, hard hat, rubber apron or rain suit. Do not use wool or leather.

ADDITIONAL INFORMATION: Safety showers and eye wash facilities should be available.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in well sealed containers. Avoid handling procedures that lead to dusting, leaks or spills. Keep storage area dry and separate from acids. Do not store near halogenated hydrocarbons or reactive metals.

OTHER PRECAUTIONS: Drains should have retention basins to allow for neutralization of spills or waste prior to disposal.

ADDITIONAL INFORMATION: Do not permit personnel to handle this material without proper training and equipment.

MATERIAL SAFETY DATA

CAUSTIC POTASH, DRY



MATERIAL SAFETY DATA

CAUSTIC POTASH, DRY

REVISED: 9/84

SUPERSEDES: New

LCP MSDS NO.: 001310583

FOR ADDITIONAL INFORMATION OR TECHNICAL SERVICE CONTACT OUR TECHNICAL SERVICE DEPARTMENT.

LCP Chemical and Plastics, Inc.
P.O. Box 98
Mathews Avenue
Solvay, N.Y. 13209
(315) 487-4700 (Collect)

This information is drawn from recognized sources believed to be reliable. LCP Chemical and Plastics, Inc. makes no guarantees or assumes any liability in connection with this information. The user should be aware of changing technology, research, regulations, and analytical procedures that may require changes herein. The above data is supplied upon the condition that persons will evaluate this information and then determine its suitability for their use.

SECTION VI - REACTIVITY DATA

Hazardous Decomposition Products (cont'd)

Incompatability

Aluminum
Lead
Tin
Zinc
Acids and their anhydrides
Acrolein
Acrylonitrile
Allyl Chloride
Allyl Alcohol
Dichloroethylene
Glyoxal
Hydroquinone
Nitroparaffins
Phosphorous
Phosphorous Pentoxide
Tetrahydrofuran
Trichloroethylene

By analogy with potassium hydroxide experience the following may be considered incompatible:

Ortho-Nitrophenol, Tetrachloroethane

Generalizing further, all chlorinated hydrocarbons and other chlorinated organic compounds are probably a potential hazard of this type.

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MAY 18 '82

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MATERIAL SAFETY
DATA SHEET

Ashland Chemical Company

DIVISION OF ASHLAND OIL CO.

P. O. BOX 2219, COLUMBUS, OHIO 43216 • (614) 653-3333

24-HOUR EMERGENCY TELEPHONE (606) 324-1133

PMC 1601



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001845

CAUSTIC SODA FLAKE 400# DRUM

PAGE: 1

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

 PRODUCT NAME: CAUSTIC SODA FLAKE 400# DRUM
 CAS NUMBER: 1310 73 2

INDUSTRIAL HYGIENE

 PRATT AND WHITNEY
 400 MAIN STREET
 EAST HARTFORD

CT 06108

 OS 50 077 7228590-
 DATA SHEET NO: 0031922-001
 LATEST REVISION DATE: 03/86-86063
 PRODUCT: 3150260
 INVOICE: 043995
 INVOICE DATE: 05/24/86
 TO: PRATT AND WHITNEY
 8801 MACON ROAD
 COLUMBUS GA 31908

ATTN: PLANT MGR./SAFETY DIR.

SECTION I-PRODUCT IDENTIFICATION

GENERAL OR GENERIC ID: ALKALI

DOT HAZARD CLASSIFICATION: CORROSIVE MATERIAL (173.240)

SECTION II-COMPONENTS

INGREDIENT	% (BY WT)	PEL	TLV	NOTE
SODIUM HYDROXIDE CAS #: 1310-73-2	100	2	2 MG/M3 - CEILING	

SECTION III-PHYSICAL DATA

PROPERTY	REFINEMENT	MEASUREMENT
BOILING POINT	NOT APPLICABLE	
VAPOR PRESSURE	NOT APPLICABLE	
SPECIFIC VAPOR DENSITY	NOT APPLICABLE	
SPECIFIC GRAVITY		2.130 77.00 DEG F 25.00 DEG C
PERCENT VOLATILES	NOT APPLICABLE	
EVAPORATION RATE	NOT APPLICABLE	

SECTION IV-FIRE AND EXPLOSION INFORMATION

FLASH POINT NOT APPLICABLE

EXPLOSIVE LIMIT NOT APPLICABLE

EXTINGUISHING MEDIA:

 SPECIAL FIRE & EXPLOSION HAZARDS: CAN REACT WITH CHEMICALLY REACTIVE METALS SUCH AS
 ALUMINUM, ZINC, MAGNESIUM, COPPER ETC. TO RELEASE HYDROGEN GAS WHICH CAN FORM
 EXPLOSIVE MIXTURES WITH AIR.

SECTION V-HEALTH HAZARD DATA

 PERMISSIBLE EXPOSURE LEVEL 2 MG/M3 - CEILING
 THRESHOLD LIMIT VALUE 2 MG/M3 - CEILING

EFFECTS OF ACUTE OVEREXPOSURE: FOR PRODUCT

 EYES - CAUSES SEVERE DAMAGE AND EVEN BLINDNESS VERY RAPIDLY.
 SKIN - CAUSES BURNS, POSSIBLE DEEP ULCERATION.
 BREATHING - OF DUST CAN CAUSE DAMAGE TO NASAL AND RESPIRATORY PASSAGES.
 SWALLOWING - RESULTS IN SEVERE DAMAGE TO MUCOUS MEMBRANES AND DEEP TISSUES, CAN
 RESULT IN DEATH ON PENETRATION TO VITAL AREAS.

FIRST AID:

 IF ON SKIN: IMMEDIATELY FLUSH EXPOSED AREA WITH WATER FOR AT LEAST 15 MINUTES, GET
 MEDICAL ATTENTION. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING
 BEFORE RE-USE.
 DISCARD CONTAMINATED SHOES.

 IF IN EYES: IMMEDIATELY FLUSH WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES,
 LIFTING UPPER AND LOWER LIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.
 IF PHYSICIAN IS NOT IMMEDIATELY AVAILABLE, CONTINUE FLUSHING WITH WATER.
 DO NOT USE CHEMICAL ANTIDOTE.

 IF SWALLOWED: DO NOT INDUCE VOMITING. VOMITING WILL CAUSE FURTHER DAMAGE TO THE
 THROAT. DILUTE BY GIVING WATER. GIVE MILK OF MAGNESIA. KEEP WARM, QUIET.
 GET MEDICAL ATTENTION IMMEDIATELY.

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MATERIAL SAFETY
DATA SHEET

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CAUSTIC SODA FLAKE 400# DRUM

PAGE: 2

SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH: , REACTIVE METALS SUCH AS ALUMINUM AND MAGNESIUM, ORGANIC MATERIALS, WATER, STRONG ORGANIC ACIDS, COPPER, STRONG MINERAL ACIDS.

SECTION VII-SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: SWEEP UP MATERIAL ONTO PAPER.

LARGE SPILL: COLLECT AND ADD SLOWLY TO LARGE VOLUME OF WATER.

WASTE DISPOSAL METHOD:

SMALL SPILL: DISSOLVE IN LARGE AMOUNT OF WATER AND NEUTRALIZE WITH 6M-HYDROCHLORIC ACID. FLUSH DOWN DRAIN WITH EXCESS WATER IN ACCORDANCE WITH APPLICABLE REGULATIONS.

LARGE SPILL: POUR INTO A LARGE TANK OF WATER AND NEUTRALIZE. FLUSH TO DRAIN WITH LARGE EXCESS OF WATER IN ACCORDANCE WITH APPLICABLE REGULATIONS.

SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: IF TLV OF THE PRODUCT OR ANY COMPONENT IS EXCEEDED, A NIOSH/MSHA JOINTLY APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS UNDER SPECIFIED CONDITIONS. (SEE YOUR SAFETY EQUIPMENT SUPPLIER). ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

VENTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S)

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES SUCH AS: , NEOPRENE, NITRILE RUBBER, POLYVINYL CHLORIDE, POLYETHYLENE

EYE PROTECTION: CHEMICAL SPLASH GOGGLES AND FACE SHIELD (8" MIN.) IN COMPLIANCE WITH OSHA REGULATIONS ARE ADVISED, HOWEVER, OSHA REGULATIONS ALSO PERMIT OTHER TYPE SAFETY GLASSES. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: TO PREVENT SKIN CONTACT, WEAR IMPERVIOUS CLOTHING AND BOOTS.

SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THE DATA SHEET MUST BE OBSERVED.

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

PMC 1601

PMC 1601

UTCIHL 16

Caustic soda liquid

MSDS NO: 236-0

PAGE 1 OF 5

DATE MSDS PRINTED: 2/27/86

SOURCE: LCP MSDS, 9/84

*
* MATERIAL SAFETY DATA SHEET *
*

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MAR 4 1986

Caustic soda liquid

INDUSTRIAL HYGIENE

ISSUED BY:

W.H. SHURTLEFF COMPANY
ONE RUNWAY RD., P.O. BOX 2800
SOUTH PORTLAND, ME. 04106
207-883-6371

The information and opinions contained in this data sheet have been supplied to the W.H. Shurtleff Company by the manufacturer or supplier of the product. The information is believed to be current and correct as of the date of printing. The data is not to be taken as a warranty or representation for which the W.H. Shurtleff Company or its suppliers take legal responsibility. Since the use of this information and these opinions and the conditions of use of the product are not within the control of the W.H. Shurtleff Company or its suppliers, it is the user's obligation to determine the conditions for safe use of the product.

ABBREVIATIONS

~ = Approximately	MD = Physician
AMT = Amount	MTL = MTRL = Material
B.A. = Butyl Acetate	NA = Not Applicable
B.D. = Bulk Density	ND = NOT DET = Not Determined
CALC = Calculated	NOT EST = Not Established
CC = Closed Cup	OC = Open Cup
COC = Cleveland Open Cup	PEL = Permissible Exposure Limits
CNS = Central Nervous System	P-m = Pensky-Martens
CO2 = Carbon Dioxide	RESP = Respirator
EST = Estimated	SCBA = Self-Contained Breathing Apparatus
H2O = Water	STEL = Short Term Exposure Limit
LG = Large	TWA = Time-Weighted Average

PMC 1601

Caustic soda liquid

MSDS NO: 238-0

PAGE 2 OF 5

W. H. Shurtleff Co.

1. IDENTIFICATION

MFG NAME: LCP Chemicals & Plastics Inc. EMER.TEL.NO: 315-487-4770
ADDRESS: Raritan Plaza II, Raritan Center, Edison, N.J. 08837
CHEM. NAME & SYNS: caustic soda liquid; sodium hydroxide; 50% liquid solution
TRADE NAME: Caustic Soda Liquid
CHEMICAL FAMILY: Alkali FORMULA: NaOH

2. PHYSICAL DATA

BOILING POINT:	280 to 310F	FREEZING POINT:	-45 to -60F
MELTING POINT:			
SPECIFIC GRAVITY:	1.530 (H2O=1)	VAPOR PRESSURE:	2.2 mmHg @ 130F
VAPOR DENSITY:	na	SOLUBILITY IN	
PERCENT VOLATILES		WATER, % BY WT.:	Complete
BY VOLUME:	~50%	EVAPORATION RATE:	
APPEARANCE AND ODOR:	Colorless viscous liquid. No odor.		

3. INGREDIENTS

MATERIAL	%	TLV
CAS# 1310732		

EXPOSURE LIMIT INFORMATION

Reacts violently with acids.
Reacts with aluminum, tin, zinc, and generates flammable Hydrogen gas.
TWA 2 mg/cu.m. maximum acceptable concentration ceiling 2 mg/cu.m.

PMC 1601

Caustic soda liquid

MSDS NO: 209-0

PAGE 3 OF 5

4. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: _____
METHOD USED: None

FLAMMABLE LIMITS
LOWER: na UPPER: na

EXTINGUISHING MEDIA: Suitable for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES: This material is corrosive to all human tissue. Wear equipment to avoid body contact.

UNUSUAL FIRE & EXPLOSION HAZARDS: Caustic soda will react with metals like aluminum, tin and zinc that will generate flammable hydrogen gas.

5. HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE:

Inhalation: Sore throat, coughing, shortness of breath.
Skin: Corrosive, serious chemical and/or thermal burns.
Eyes: Corrosive, severe to permanent injury.
Ingestion: Corrosive, spasms, vomiting, tissue destruction.

FIRST AID PROCEDURES:

First inhalation: Remove from exposure. Get medical help.
Skin: Remove contaminated clothing. Continue prolonged washing with tempered water. Get medical help for burns.
Eyes: Prolonged washing with water. Get medical help.
Ingestion: Drink plenty of water or fruit juice. Do not induce vomiting. Get prompt medical help.

NOTES TO PHYSICIAN:

PMC 1601

Caustic soda liquid

MSDS NO: 238-0

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6. REACTIVITY DATA

STABILITY

STABLE: X

UNSTABLE:

CONDITIONS TO AVOID:

Avoid contact with acids & metals like aluminum, tin, zinc.

INCOMPATIBILITY (MATERIALS TO AVOID):

Organic chemicals, nitrocarbons & halocarbons, items mentioned above and alloys containing them.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:

None.

HAZARDOUS POLYMERIZATION CONDITIONS TO AVOID:

When exposed to air it will react to form Sodium Carbonate. Trichloroethylene will react to form dichloroacetylene which is spontaneously flammable.

MAY OCCUR:

WILL NOT OCCUR: X

7. SPILL OR LEAK PROCEDURE

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Protective clothing and equipment must be worn by personnel. Contain spillage or leakage in suitable containers or contain in a holding area. Do not allow drainage to sewers, streams or storm conduits. Recover with vacuum equipment such as a septic tank truck or neutralize with weak acid solutions and flush with water. Avoid splashing and misting which could increase health hazards.

WASTE DISPOSAL METHOD

Dispose of waste per company emergency contingency plan or in accordance with federal, state and local regulations. Waste is composed of neutral salts and water.

Reportable quantity: 1000 lbs. Planning ahead is essential for handling spills. Abundant water, including ey baths and safety showers, should be available in the handling or storage areas.

PMC 1601

Caustic soda liquid

MSDS NO: 123-0

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8. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: None normally required however if "misting" is a possibility, a NIOSH approved particulate respirator should be worn.

VENTILATION: Provide adequate ventilation to meet TLV requirements.

PROTECTIVE GLOVES: Eye Protection: Splash goggles, face shield.
Rubber, latex, or plastic gloves. Do not use leather or wool.
Rubber boots- top covered rubbers over leather shoes is not recommended.

OTHER PROTECTIVE EQUIPMENT: Rubber apron-rainwear or disposable Tyvek suits should be worn in splash areas. Hard hat.
Eye wash stations and safety showers must be immediately available.

9. SPECIAL HANDLING INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Storage tanks should be contained in a diked area free of potential contact with acids, organics, and metals like aluminum, tin or zinc.

When mixing caustic soda & water, always add the caustic slowly and continuously, if possible, to the water (stirring) to minimize spattering from localized heat of dilution. DO NOT add water to the caustic.

Do not permit employees to handle caustic soda without advance training and proper protective equipment.

Abundant water must be available in handling areas.

Drains must have retention basins for neutralization before discharge.

OTHER PRECAUTIONS:

Storage tanks should be labeled with 4" lettering to avoid cross contamination of materials. Oversize vent is suggested for storage tanks in areas where freezing occurs.

Recommended materials of construction are nickel, stainless steel, lined steel, and where temperature limits and iron pick up is acceptable, plain carbon steel.

10. FURTHER INFORMATION



THE INDIUM CORPORATION OF AMERICA
1676 Lincoln Ave. • Utica, NY 13502

Emergency Telephone No. 315-797-1630

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OCT 15 1987

Material Safety Data Sheet

INDUSTRIAL HYGIENE

Common Name Potassium Hydroxide Solution

KOH (45% - 52% Aqueous)

SECTION 1—HAZARDOUS INGREDIENTS/IDENTITY

Hazardous Component(s) (chemical and common name(s))	OSHA PEL	ACGIH TLV	% (optional)	CAS NO.
Potassium Hydroxide Solution	NA	2 mg/m3	100	1310583

SECTION 2—PHYSICAL AND CHEMICAL CHARACTERISTICS

Boiling Point	45% = 270F	50% = 292F	Specific Gravity (H ₂ O = 1)	45% = 1.450	50% = 1.520
Vapor Density (Air = 1)	NA		Vapor Pressure (mm Hg)	68F @ 2 mm Hg	
Solubility in Water	Complete		Reactivity in Water	NA	
Appearance and Odor	Colorless Viscous Liquid / No odor		Melting Point	NA	

SECTION 3—FIRE AND EXPLOSION DATA

Flash Point	NA	F.	C.	Method Used	NA	Flammable Limits in Air % by Volume	LEL Lower	NA	UEL Upper	NA
Auto-ignition Temperature	NA			Extinguisher Media	<input type="checkbox"/> Foam <input type="checkbox"/> "Alcohol" Foam <input type="checkbox"/> CO ₂ <input type="checkbox"/> Dry Chemical <input type="checkbox"/> Water Spray <input checked="" type="checkbox"/> Other <input type="checkbox"/> N.A.					

Special Fire Fighting Procedures Extinguishing media shall be suitable for surrounding fire. Use NIOSH/MSHA APPROVED SCBA and full protective clothing.

Unusual Fire and Explosion Hazards This material is corrosive to all human tissue. It will react violently with many organic chemicals, especially nitrocarbons and chlorocarbons. Reacts with zinc, aluminum, tin and other active metals liberating flammable hydrogen gas.

SECTION 4—PHYSICAL HAZARDS (REACTIVITY DATA)

Stability Unstable ☐ Stable ☒ Conditions to Avoid Do not allow contact with acids and metals such as Aluminum, Zinc, Tin, Organic chemicals, nitrocarbons, halocarbons and metals or alloys mentioned above.

Hazards Decomposition Products Flammable hydrogen gas may be generated when KOH and certain metals react. Hazardous Polymerization May Occur ☐ Will Not Occur ☒ Conditions to Avoid Exposure to air can form potassium carbonate

SECTION 5—HEALTH HAZARDS

1. Acute

Inhalation Mist may cause injury to entire respiratory tract.
Eyes Will cause severe to permanent injury
Skin Will cause serious burns.

2. Chronic

Ingestion Damages throat area and gastro - respiratory tract.
Inhalation No Data
Eyes No Data
Skin No Data
Ingestion No Data

Signs and Symptoms of Exposure Serious burns to human tissue

Medical Conditions Generally Aggravated by Exposure NO

Chemical Listed as Carcinogen or Potential Carcinogen

National Toxicology Program Yes ☐ No ☒

I.A.R.C. Monographs Yes ☐ No ☒

OSHA Yes ☐ No ☒

Emergency and First-Aid Procedures Inhalation: Remove from exposure, get medical help. Ingestion: Drink plenty of Water or fruit juice. Do not induce vomiting. Eyes: Flush for at least 15 minutes. Skin: Remove contaminated clothing and rinse skin with tempered water. In any case consult physician.

SECTION 6—SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be Taken in Handling and Storage Storage tanks should be contained in a diked area that has sufficient capacity to hold the contents of the tank. This area should be free of potential contact with acids organics and reactive metals.

Steps to be Taken in Case Material is Released or Spilled Wear full protective clothing. Contain spillage in suitable containers.

Do not allow drainage to sewers, streams, or storm conduits. Neutralize with weak acid solutions and flush with water. Avoid splashing or misting.

Waste Disposal Methods (Consult federal, state, and local regulations) Dispose of in accordance with Federal, State, and local regulations

SECTION 7—SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection (Specify Type) NIOSH/MSHA approved respirator

Ventilation ☒ Local Exhaust Adequate ventilation is required to meet TLV requirements.
☐ Mechanical (General)

Protective Gloves Rubber, latex, plastic Eye Protection Splash proof goggles

Other Protective Clothing or Equipment Coveralls, rubber boots. Rubbers over leather shoes is not recommended.

Work/Hygienic Practices

SECTION 8—REFERENCES

Dangerous Properties of Industrial Materials; N. Irving Sax, '84

ACGIH TLV's; second printing

LCP Chemical and Plastics, Inc. Solvay, N.Y.

Potassium Hydroxide MSDS cont'd.

ADDITIONAL INFORMATION

Reportable spillage quantity is 1000 lbs or 454 kg. planning ahead is essential for handling spills. Proper equipment and trained employees should be readily available to correct a spill situation.

Safety eye wash/shower stations must be available in the work area.

Storage tanks should be labeled with 4" lettering to avoid cross contamination of materials. Oversized vents are suggested for storage tanks in climates where freezing occurs.

Recommended materials of construction are nickel, stainless steel, lined steel or Plain steel where temperature limits and iron pick up are acceptable.

SPECIAL PRECAUTIONS

When mixing KOH with water, always add the caustic slowly and continuously to the water, while stirring, to minimize spattering from localized heat of dilution. Do Not add water to the caustic.

Do not permit employees to handle without advanced training and proper protective equipment. Plenty of water should be available in the handling areas. Drains must have retention basins for neutralization before discharge to an outfall.



J. T. Baker Chemical Co.

222 Red School Lane Phillipsburg, N.J. 08865
24-Hour Emergency Telephone - (201) 859-2151

Chemtrec # (800) 424-9300
National Response Center # (800) 424-8802

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P5884 -01

Effective: 10/08/85

Potassium Hydroxide

INDUSTRIAL ENGINE

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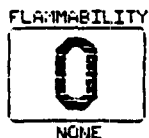
Issued: 10/09/85

SECTION I - PRODUCT IDENTIFICATION

Product Name: Potassium Hydroxide
Formula: KOH
Formula Wt: 56.11
CAS No.: 01310-58-3
NIOSH/ RTECS No.: TT2102000
Common Synonyms: Potassium Hydrate
Product Codes: 3141, 3150, 3146, 3147, 5342, 3142, 3140, 5085

PRECAUTIONARY LABELLING

BAKER SAF-T-DATATM System



Laboratory Protective Equipment



Precautionary Label Statements

POISON! DANGER!
CAUSES SEVERE BURNS
MAY BE FATAL IF SWALLOWED

Do not get in eyes, on skin, on clothing.

Avoid breathing dust. Keep in tightly closed container. Use with adequate ventilation. Wash thoroughly after handling.

SECTION II - HAZARDOUS COMPONENTS

Component	3	CAS No.
Potassium Hydroxide	85-100	1310-58-3

SECTION III - PHYSICAL DATA

Boiling Point:	1320°C (2408°F)	Vapor Pressure(mmHg):	N/A
Melting Point:	360°C (680°F)	Vapor Density(air=1):	N/A

Continued on Page: 2



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Potassium Hydroxide

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SECTION III - PHYSICAL DATA (Continued)

Specific Gravity: 2.04
(H₂O=1)

Evaporation Rate: N/A
(Butyl Acetate=1)

Solubility(H₂O): Complete (in all proportions) & Volatiles by Volume: 0

Appearance & Odor: White or slightly yellow pellets; no odor.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point: N/A

NEPA 704M Rating: 3-0-1

Fire Extinguishing Media

Use water spray.

Special Fire-Fighting Procedures

Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode.

SECTION V - HEALTH HAZARD DATA

Threshold Limit Value (TLV/TWA): 2 mg/m³ (ppm)

Effects of Overexposure

Contact with skin or eyes may cause severe irritation or burns.
Excessive inhalation of dust is irritating and may be severely damaging to respiratory passages and/or lungs.
Ingestion may cause severe burning to mouth and stomach.

Emergency and First Aid Procedures

If swallowed, do NOT induce vomiting; if conscious, give large amounts of water. Follow with diluted vinegar, fruit juice or whites of eggs, beaten with water.
In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash clothing before re-use.

SECTION VI - REACTIVITY DATA

Stability: Stable

Hazardous Polymerization: Will not occur

Conditions to Avoid: moisture

Incompatibles: water, strong acids, organic materials

J.T.Baker

J. T. Baker Chemical Co.

222 Red School Lane Phillipsburg, N.J. 08865
24-Hour Emergency Telephone - (201) 859-2151

Chemtrec # (800) 424-9300
National Response Center # (800) 424-8802

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MATERIAL
SAFETY
SHEET

PS894 -01
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Potassium Hydroxide

Page:
Issued: 10/09/85

SECTION VII - SPILL AND DISPOSAL PROCEDURES

Steps to be taken in the event of a spill or discharge

Wear self-contained breathing apparatus and full protective clothing.
With clean shovel, carefully place material into clean, dry container and cover; remove from area. Flush spill area with water.

J. T. Baker Neutracit-2^R caustic neutralizer is recommended for spills of this product.

Disposal Procedure

Dispose in accordance with all applicable federal, state, and local environmental regulations.

EPA Hazardous Waste Number: D002, D003 (Corrosive, Reactive Waste)

SECTION VIII - INDUSTRIAL PROTECTIVE EQUIPMENT

Ventilation: Use general or local exhaust ventilation to meet TLV requirements.

Respiratory Protection: None required where adequate ventilation conditions exist. If airborne concentration is high, a dust/mist respirator is recommended. If concentration exceeds capacity of respirator, a self-contained breathing apparatus is advised.

Eye/Skin Protection: Safety goggles, uniform, apron, neoprene gloves are recommended.

SECTION IX - STORAGE AND HANDLING PRECAUTIONS

SAF-T-DATATM Storage Color Code: White Stripes

Special Precautions

Keep container tightly closed. Store in corrosion-proof area.

SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)

Proper Shipping Name	Potassium hydroxide, dry solid
Hazard Class	Corrosive material (solid)
UN/NA	UN1813
Labels	CORROSIVE
Reportable Quantity	1000 LBS.

INTERNATIONAL (I.M.O.)

Proper Shipping Name	Potassium hydroxide, dry solid
----------------------	--------------------------------



T. Baker Chemical Co.

222 Red School Lane Phillipsburg, N.J. 08865
24-Hour Emergency Telephone -- (201) 859-2151

Chemtrec # (800) 424-9300
National Response Center # (800) 424-8802

1606
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P5884 -01

Potassium Hydroxide

Page: 4

Effective: 10/08/85

Issued: 10/09/85

SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION (Continued)

Hazard Class 8
UN/NA UN1813
Labels CORROSIVE

N/A = Not Applicable or Not Available

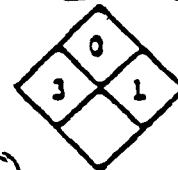
The information published in this Material Safety Data Sheet has been compiled from our experience and data presented in various technical publications. It is the user's responsibility to determine the suitability of this information for the adoption of necessary safety precautions. We reserve the right to revise Material Safety Data Sheets periodically as new information becomes available.

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hooker INDUSTRIAL HYGIENE PROCESS chemicals



ADAPTED FROM USCG
FORM NO. 138 - 000-4

MATERIAL SAFETY DATA SHEET

UTC1HL(9)

NFPA Designation

CHEMICAL NAME Potassium Hydroxide, Flake		PLANT CODE	MATERIAL CODE NO.
MANUFACTURER'S NAME Hooker Chemicals & Plastics Corp.		EMERGENCY TELEPHONE NO. (716) - 278-7777	
ADDRESS (NUMBER, STREET, CITY, STATE AND ZIP CODE) Buffalo Avenue, Niagara Falls, New York 14303			
CHEMICAL NAME AND SYNONYMS Potassium Hydroxide, Potassium Hydrate		TRADE NAME Caustic Potash, Flake	
CHEMICAL FORMULA KOH	MOLE WT. 56.1	USES Soap, Glass, Textiles, Pharmaceuticals,	

Physical Properties

BOILING POINT (°F)	24000	SPECIFIC GRAVITY (H ₂ O = 1)	2.044
VAPOR PRESSURE (mm Hg)	--	PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)	--	EVAPORATION RATE (%)	
SOLUBILITY IN WATER @ 68°F	52%		
APPEARANCE AND ODOR Off-white, hygroscopic solid with no odor			

Fire and Explosion Hazard Data

FLASH POINT	METHOD	FLAMMABLE LIMITS		AUTOIGNITION TEMP.	ZONE	OF
None	BP	UEL	LEL	--	--	--

EXTINGUISHING MEDIA

SPECIAL FIRE FIGHTING PROCEDURES **As appropriate for surrounding fire.**

UNUSUAL FIRE AND EXPLOSION HAZARDS **Hot or molten material will react violently with water liberating heat and causing splashing.**

Reactivity

INCOMPATIBILITY **Reacts with zinc, aluminum, lead, etc. liberating flammable hydrogen; can react violently with many organic compounds.**

HAZARDOUS DECOMPOSITION PRODUCTS **--**

CONDITIONS TO AVOID **Wear protective equipment to avoid contact with body or inhalation of mist or dust. In processes, control rates of addition to control temperature and avoid violent reactions.**

Potassium Hydroxide, Flake (Cont'd.)

Health Related Data

THRESHOLD LIMIT VALUE (as KOH) C: 2 mg/cu meter of air.

EFFECTS OF OVEREXPOSURE (SKIN, EYE, INHALATION, ETC.) Caustic Potash is a primary irritant. Solid caustic and concentrated solutions are destructive to tissues and cause serious burns. Contact with any form may cause severe damage to eyes. Inhalation of dust or mist can cause injury to the entire respiratory tract. In case of dilute solutions, symptoms of irritation may not be apparent until some time has passed.

EMERGENCY AND FIRST AID PROCEDURES For external exposures, flush with large amounts of water -- speed of removal of caustic potash is of prime importance. If taken internally, dilute by drinking water or milk - do not induce vomiting. If inhaled, remove to clean atmosphere. For all eye exposures and serious over-exposures, get medical attention.

SPECIAL MEDICAL PROCEDURES For skin exposures, avoid salves or ointments for at least 24 hours. After first 15 minutes of flushing with water, a few drops of povidone solution may be instilled in eyes. In case of ingestion, following dilution, fruit juice or dilute vinegar may be administered to neutralize caustic.

Special Protection Information

VENTILATION As required to control dust or mist.

RESPIRATORY (TYPE) Filter or dust type.

GLOVES (TYPE) Rubber, neoprene or vinyl.

EYE (TYPE) Fitted chemical safety goggles.

OTHER Rubber safety toe shoes or boots, cotton coveralls, hard hat.

SPECIAL PRECAUTIONS FOR HANDLING AND STORAGE Store in a cool, dry place. Keep separate from acids, metals, explosives, organic peroxides and easily ignitable materials.

Wear complete protective equipment in handling product.

STEPS TO TAKE IN EVENT OF SPILL OR RELEASE Get complete protective equipment, sweep up and place material in metal can. Flush area with ample water, rinse with diluted acetic or muriatic acid, and then finally with water.

WASTE DISPOSAL Dissolve and/or flush to retention area for pH adjustment and dilution before discharging to stream or sewer system.

REMARKS Caustic Potash and Trichloroethylene are especially hazardous since they react to form spontaneously flammable dichloroacetylene.

REFERENCES (1) MCA Safety Data Sheet SD-10; Caustic Potash; (2) Sax, N I, Dangerous Properties of Industrial Materials, 3rd Edition, 1968.

Process Chemicals Technical Data Sheet 791 C.

NAME G W Darling

LOC. Niagara

DATE January 1972

Revised April 1980

Pat Hydroxide

PMC 1606-1

CAUSTIC POTASH, STANDARD GRADE - Data Sheet No. 730-B

DESCRIPTION

Hooker Standard Grade Caustic Potash (potassium hydroxide) is available from the Eastern Chemical Division as a solution containing 45-50% KOH by weight, in flake, granular, and in several other dry forms.

For further information on physical properties and handling and storage recommendations, write to Hooker Technical Service Department.

CHEMICAL SPECIFICATIONS

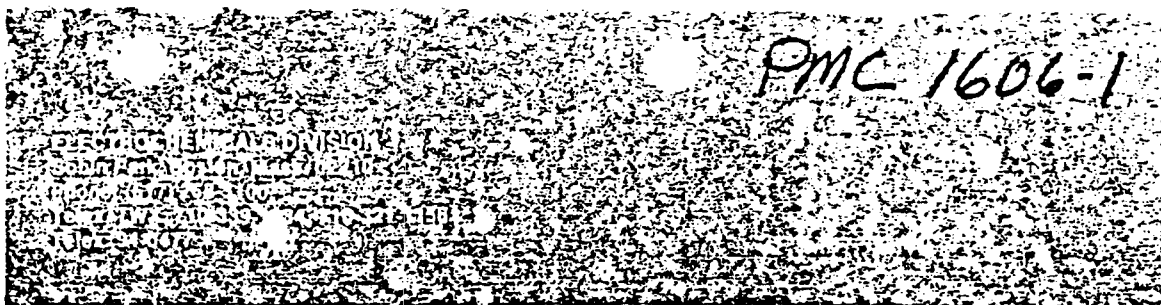
	<u>Liquid</u>	<u>Flake/Granular</u>
Equivalent KOH	45.0-50.0%	90.0% min
NaOH	0.04% max	0.10% max
K ₂ CO ₃	0.2% max	1.0% max
KCl as Cl	0.35% max	0.65% max
KClO ₃	0.0006% max	None
K ₂ SO ₄	0.002% max	0.006% max
Fe	0.0005% max	0.003% max
Si	0.001% max	0.002% max
Ca	0.0005% max	0.001% max
Mg	0.0005% max	0.001% max

Other dry forms available include Walnut, Broken, Powder, Crushed, and Solid.

PHYSICAL PROPERTIES

Molecular Weight	56.1
Melting point	-22°F
45%	48°F
50%	427°F
90%	716°F
Anhydrous	
Weight per Gallon 45%	12.18 pounds
50%	12.68 pounds

The information presented herein, while not guaranteed, is to the best knowledge true and accurate. No warranty or guarantee express or implied is made regarding the performance or quality of any product, since the manner of use and conditions of storage and handling are beyond our control. No suggestion for product use, nor anything contained herein, shall be construed as a recommendation for its use in infringement of any existing patent.



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specification: POTASSIUM HYDROXIDE - FLAKE
KOH

MAY 15 1981

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GRADE:

Mercury Cell, 90% KOH minimum

SPECIFICATION:

Element	Minimum	Maximum
KOH	90.00%	91.5 %
K ₂ CO ₃		0.8 %
NaOH		0.45%
KCl		100 ppm
Fe		10 ppm
SiO ₂		40 ppm
KClO ₃		1 ppm
Ca		5 ppm
K ₂ SO ₄		20 ppm
Hg		0.02 ppm
Mg		5 ppm

DESCRIPTION:

Chalk White in color

Molecular Weight: 56.1
Bulk Density: Approx. 65 lb./cu. ft.
Melting Point: 90% 219° C
Anhydrous 380° C

NOTICE: The test data and information in this bulletin are presented in good faith, however, no representations or warranties, written or oral, are made by IMC Chemical Group, Inc. as to such data and information or that the goods mentioned herein are suitable for any particular purpose, or that such goods are free from any material infringement. Purchasers should satisfy themselves of the suitability of any such goods for the purpose intended or to

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1746

Caustic Potash, Standard Grade

-2-

DS No. 78C-B

USES

Caustic potash is a strong alkali which readily combines with many substances. Because of the difference in properties between potassium compounds and the corresponding sodium compound, caustic potash has many uses not suited to the cheaper caustic soda. Some of the industries requiring caustic potash are: soap, glass, textile, pharmaceuticals, dyes, cosmetics, organic and inorganic potassium compounds, perfumes and essential oils, oil refining, electroplating, alkaline storage batteries, and other industries and processes.

PRECAUTIONARY INFORMATION

The following precautions for handling caustic potash are quoted from our drum label. This warning label has been prepared in accordance with a pattern established by the Manufacturing Chemists' Association.

"DANGER! CAUSTIC POTASH IS CORROSIVE.
BURNS SKIN AND EYES.

Avoid contact with body or clothing. Do not take internally.

PRECAUTIONS: When handling Caustic Potash wear goggles or face shield and avoid all contact with skin. While making solutions, add Caustic Potash slowly to surface of solution to avoid violent spattering.

In case of accidental contact with skin, immediately flush affected parts with water and wash with vinegar.

For eyes, flush freely with water for at least 15 minutes and get medical attention. See MCA Data Sheet SD-1."

117C JHLE
(R) 3/23/78

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Bureau of Labor Standards

PMC 1643
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MATERIAL SAFETY DATA SHEET G. E. PARSONS

Code: 16583

SECTION I	
MANUFACTURER'S NAME MACDERMID, INC.	EMERGENCY TELEPHONE NO. 203-754-6161
ADDRESS (Number, Street, City, State, and ZIP Code) 526 HUNTINGDON AVENUE, WATERBURY, CONNECTICUT 06720	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS Metax GT-2 Bright Copper Maint.
CHEMICAL FAMILY	FORMULA

SECTION II HAZARDOUS INGREDIENTS					
PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS N.A.			BASE METAL N.A.		
CATALYST "			ALLOYS "		
VEHICLE "			METALLIC COATINGS "		
SOLVENTS "			FILLER METAL PLUS COATING OR CORE FLUX "		
ADDITIVES "			OTHERS "		
OTHERS "					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Potassium Cyanide				2	5mg/M ³
Copper Cyanide				1	5mg/M ³
Selenium Less Than				1	0.1mg/M ³

SECTION III PHYSICAL DATA	
BOILING POINT (°F)	SPECIFIC GRAVITY (H ₂ O=1)
VAPOR PRESSURE (mm Hg)	PERCENT VOLATILE BY VOLUME (%)
VAPOR DENSITY (AIR=1)	EVAPORATION RATE (_____/hr)
SOLUBILITY IN WATER	
APPEARANCE AND ODOR	Colorless solution

SECTION IV FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (Method used)	None	FLAMMABLE LIMITS	None
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

PMC 1643

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

See Section II

EFFECTS OF OVEREXPOSURE

Can cause skin irritation

EMERGENCY AND FIRST AID PROCEDURES

Eyes - Flush with water for 15 minutes. Contact doctor.

Skin - Flush with water.

Internal - Treat as for cyanide. Get immediate medical aid.

SECTION VI REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATIBILITY (Materials to avoid)

Acids or acidic materials

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Flush with water to drain.

WASTE DISPOSAL METHOD

Treat as for cyanides and selenium.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

X

OTHER

PROTECTIVE GLOVES

Rubber

EYE PROTECTION

Face shield

OTHER PROTECTIVE EQUIPMENT

Rubber apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep away from acids

OTHER PRECAUTIONS

9/1/78
WHT:CG

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Bureau of Labor Standards
MATERIAL SAFETY DATA SHEET

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16582

SECTION I

MANUFACTURER'S NAME MACDERMID, INC.		EMERGENCY TELEPHONE NO. 203-754-6161
ADDRESS (Number, Street, City, State, and Zip Code) 526 HUNTINGDON AVENUE, WATERBURY, CONNECTICUT 06720		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS Metax QT Bright Copper Maintenance
CHEMICAL FAMILY	FORMULA	

SECTION II HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS N.A.			BASE METAL N.A.		
CATALYST "			ALLOYS "		
VEHICLE "			METALLIC COATINGS "		
SOLVENTS "			FILLER METAL PLUS COATING OR CORE FLUX "		
ADDITIVES "			OTHERS "		
OTHERS "					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Potassium Cyanide				2	5mg/M ³
Copper Cyanide				1	5mg/M ³
Selenium				Less Than	0.1mg

SECTION III PHYSICAL DATA

BOILING POINT (°F)		SPECIFIC GRAVITY (H ₂ O = 1)	1.02
VAPOR PRESSURE (mm Hg)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR = 1)		EVAPORATION RATE (°F)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR	Colorless solution		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used)	None	FLAMMABLE LIMITS	None
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

PMC 1644

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

See Section II

EFFECTS OF OVEREXPOSURE

Can cause skin irritation

EMERGENCY AND FIRST AID PROCEDURES

Eyes - Flush with water for 15 minutes. Contact doctor.

Skin - Flush with water.

Internal - Treat as for cyanide. Get immediate medical aid.

SECTION VI REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATIBILITY (Materials to avoid)

Acids or acidic materials

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Flush with water to drain.

WASTE DISPOSAL METHOD

Treat as for cyanides and selenium.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

X

OTHER

PROTECTIVE GLOVES

Rubber

EYE PROTECTION

Face shield

OTHER PROTECTIVE EQUIPMENT

Rubber apron

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep away from acids

OTHER PRECAUTIONS

K-78 PMC 1764

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Occupational Safety and Health AdministrationForm Approved
OMB No. 44-R1387

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MATERIAL SAFETY DATA SHEET

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Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

G. E. PARSONS

SECTION I

MANUFACTURER'S NAME KOCOUR CO.	EMERGENCY TELEPHONE NO. (312) 847-1111
ADDRESS (Number, Street, City, State, and ZIP Code) 4800 S. ST. LOUIS AVE. CHICAGO, IL. 60632	
CHEMICAL NAME AND SYNONYMS Sodium Thiocyanate	TRADE NAME AND SYNONYMS Solution R-48
CHEMICAL FAMILY	FORMULA Aqueous solution 12%

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H ₂ O=1)	
VAPOR PRESSURE (mm Hg.)		PERCENT. VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Let	Uet
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

MAY 18 '82 1746

PMC 1778

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MATERIAL SAFETY DATA SHEET

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older info in file

SECTION I - IDENTIFICATION

MANUFACTURER'S NAME <i>Enthone, Inc.</i>	EMERGENCY TELEPHONE NO. <i>203-934-8611</i>
ADDRESS (Number, Street, City, State, and ZIP Code) <i>Box 1900 New Haven, Conn - 06508</i>	
CHEMICAL NAME AND SYNONYMS <i>N.A.</i>	TRADE NAME AND SYNONYMS <i>Enthabrite Cadmium Concentrate</i>
CHEMICAL FAMILY <i>N.A.</i>	FORMULA <i>N.A.</i>

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
<i>Cadmium</i>	<i>13.5</i>	<i>0.2 mg/M³</i>
<i>Sodium Cyanide</i>	<i>27.5</i>	<i>5 mg/M³</i>

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	<i>232°F</i>	SPECIFIC GRAVITY (H ₂ O=1)	<i>1.34</i>
VAPOR PRESSURE (mm Hg.)	—	PERCENT VOLATILE BY VOLUME (%)	—
VAPOR DENSITY (AIR=1)	—	EVAPORATION RATE (—=1)	—
SOLUBILITY IN WATER	<i>soluble</i>		
APPEARANCE AND ODOR <i>Very light yellow liquid with no significant odor</i>			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	<i>None</i>	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA	<i>in a fire - Water, CO₂, Foam</i>			
SPECIAL FIRE FIGHTING PROCEDURES	<i>Avoid contact with acids. Contact with acid will produce highly toxic HCN fumes</i>			
UNUSUAL FIRE AND EXPLOSION HAZARDS				

MAY 18 '82

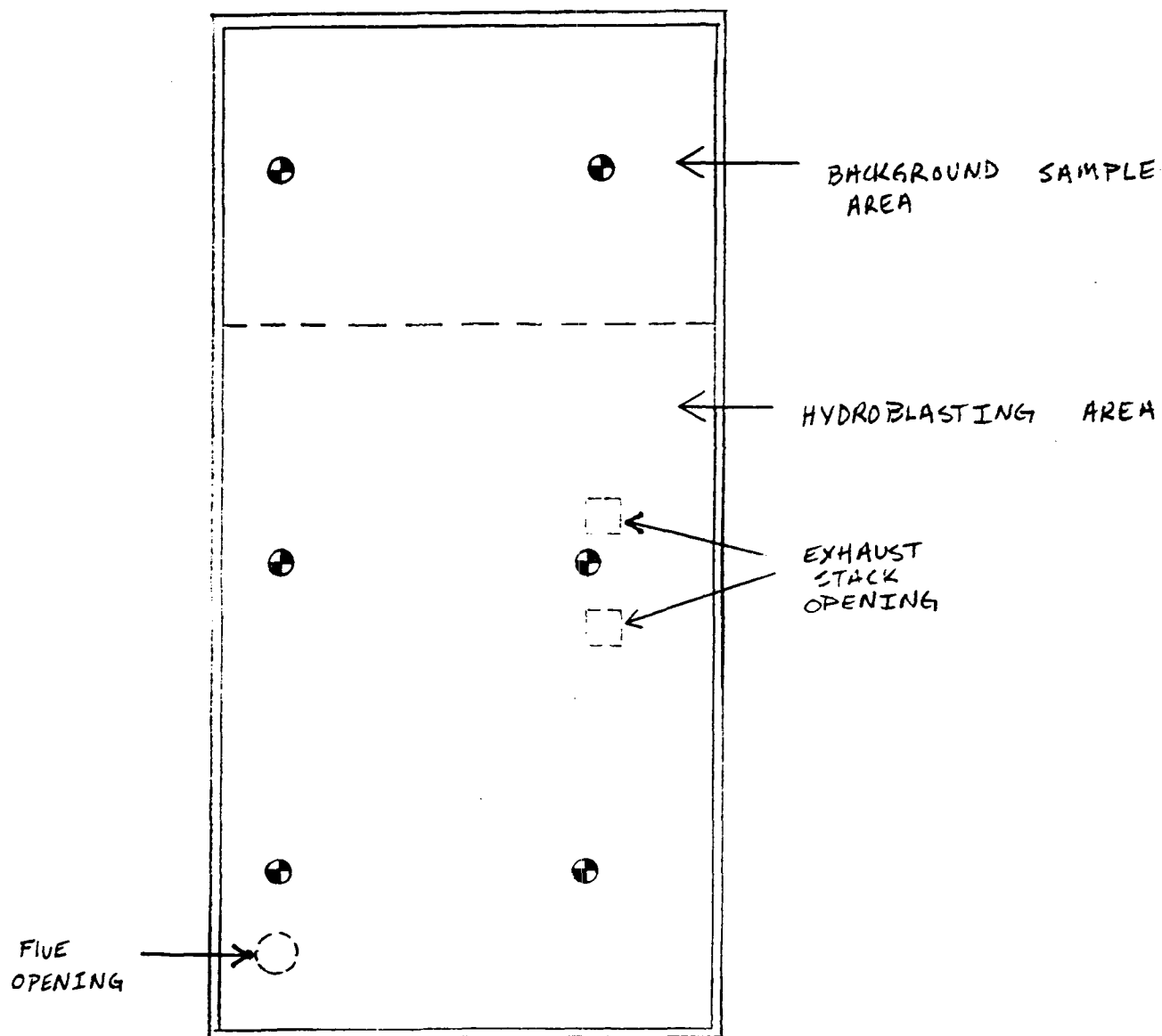
1746

LOCAL I.A.M.

ATTACHMENT C

CEILING WIPE SAMPLE LOCATION MAP

MODEL		TITLE	ATTACHMENT C	BY	SLS
FILE				DATE	3/15/89
JOB		CEILING WIPE SAMPLE LOCATION MAP		PAGE	1 OF 1



⊕ CEILING WIPE SAMPLE LOCATION

July 28, 1989

Mr. George Dews
Senior Sanitary Engineer
Hazardous Waste Management Section
Department of Environmental Protection
165 Capitol Avenue
Hartford, CT 06106

Mr. Stephen Yee
Environmental Engineer
Waste Management Division
US EPA
90 Canal Street - 3rd floor
Boston, MA 02114

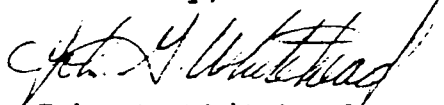
Re: Revised Burn-Zol Hazardous Waste Incinerator Closure Plan
UTC - Pratt & Whitney East Hartford, CT
EPA ID # CT D 990672081

Dear Sirs:

Pratt & Whitney is pleased to submit a revised closure plan for the Burn-Zol hazardous waste incinerator located at our facility in East Hartford, CT. This plan represents our efforts following the latest round of agency comments received in a joint letter from EPA Region I and the Connecticut Department of Environmental Protection dated April 27, 1989.

We are eager to begin closure activities upon closure plan approval and respectfully request a timely review. Please contact Scott Singer at (203) 565-2016 with any questions or comments.

Sincerely,



John G. Whitehead
Plant Manager

JGW/SLS/bab

s-s3i

CLOSURE PLAN
FOR THE BURN-ZOL
HAZARDOUS WASTE INCINERATOR

Resource Conservation and Recovery Act
Concentrated Waste Treatment Plant
Pratt & Whitney
400 Main Street Facility
East Hartford, Connecticut
EPA ID #CT D 990672081

July 28, 1989

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APPENDIX

A. Site Health and Safety Plan

B. Figures and Plates

Figure 1. Site Location Map

Figure 2. Incinerator Sketch Layout-Pre 1988

Figure 3. Incinerator Sketch Layout-As of June 22, 1988

Figure 4. Incinerator Train Diagram

Plates 1-5

C. Waste Stream Analytical Data

D. Refractory Sampling Locations and Analytical Data

E. Closure Performance Standards

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

1.0 INTRODUCTION

This closure plan is for the hazardous waste incinerator located at the Concentrated Waste Treatment Plant of United Technologies - Pratt & Whitney East Hartford facility, EPA ID No. CT D 990672081. Closure of this unit will be conducted in accordance with all applicable RCRA regulations, and will:

- 1) Minimize the need for further maintenance, and;
- 2) Control, minimize or eliminate to the extent necessary to protect human health and the environment, the post closure escape of hazardous waste, hazardous constituents, leachate, or contaminated run-off to the groundwater, surface water or the atmosphere.

In subsequent sections, this closure plan provides a description of methods to be applied and precautions to be taken in closing the incinerator. Specific closure activities are described in detail and a trackable closure schedule and cost estimate are provided.

The following general information applies to this plan:

- 1) Personal Health and Safety

A specific Site Health and Safety Plan has been developed for all closure activities and is included as Appendix A. The decontamination crew will consist of a minimum of two individuals at all times who will be adequately trained and familiar with the elements of the Health and Safety Plan. Supervision of all closure activities will include the supervisor(s) of the decontamination crew and members of Pratt & Whitney's Environmental Protection Group.

- 2) Sudden or Non-Sudden Release

The activities associated with incinerator closure present a moderate risk potential for the release of hazardous waste. In the event of an unplanned release of hazardous waste, emergency response procedures outlined in Pratt & Whitney's Environmental Compliance Manual will be activated.

2.0 FACILITY DESCRIPTION

The Concentrated Waste Treatment Plant (CWTP) functions as the hazardous waste treatment and storage facility at the Pratt & Whitney East Hartford plant. Hazardous wastes are transported to the CWTP from areas within the East Hartford plant and from Pratt & Whitney satellite plants located in Connecticut, Maine and New York.

As specified on the RCRA Part A application, the CWTP consists of a hazardous waste barrel storage area, a concentrated waste water treatment building and a liquid injection hazardous waste incinerator. These operations are located in an area near the

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

northern end of the East Hartford plant complex. (Appendix B, Figure 1).

The CWTP incinerator has not operated since the last of four test burns dated May 30, 1984. This is the only equipment at the CWTP that will undergo closure as described in this plan.

3.0 INCINERATOR DESCRIPTION

Incinerator operations at the CWTP include the incinerator and the associated waste feed lines. In later sections of the closure plan the incinerator will be referred to as the incinerator train.

The incinerator train encompasses the entire incineration process from the initial liquid waste injection nozzles to and including the exhaust stacks. Specific incinerator train components include: the waste injection nozzles, the primary and secondary combustion chambers, the lined flue piping, the waste heat boiler and heat exchanger, the unlined flue piping and the air pollution control equipment.

The original layout of the incinerator train and waste feed lines is presented in Appendix B, Figure 2. Only the initial combustion unit and the exhaust stacks are located outside of the building. Appendix B, Figure 3 depicts the current incinerator train and waste feed line layout. In 1988, the lined flue piping, the waste heat boiler, the unlined flue piping and a portion of the air pollution control were removed from the incinerator train. These components were then moved to a storage area north of the building and a dedicated enclosure was constructed.

A total of four different waste types were originally proposed for incineration; blended oils, zyglo solution, cyanide solution and a wax/solvent mixture. Four waste feed lines were installed to feed the incinerator train. Three of the feed lines are underground and originate in the basement of the barrel storage building. The fourth line was above ground and originated from within the incinerator building. As depicted in Appendix B, Figure 2, line #1 was designed to transfer two waste streams; the cyanide and zyglo solutions. Lines #2 and #3 were designed to carry blended oils. Line #4, the wax/solvent line, originated directly from the wax/solvent tank located in the incinerator building.

A generalized diagram of the incinerator train is presented in Appendix B, Figure 4. Below is a narrative description of the specific incinerator train components.

The initial waste combustion unit is identified as a Burn-Zol Model 272 liquid injection incinerator. This unit is cylindrical in shape with a height of twenty one feet three inches and an outer diameter of six feet six inches. Between the outer stainless steel shell and the inner steel shell are 3 inches of forced air cooling. In

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

addition, there are six inches of high temperature, acid resistant refractory lining inside the unit. The incinerator is subdivided into primary and secondary combustion chambers and a tertiary holding chamber. Each chamber is five feet in diameter and the combined area totals 19.5 square feet.

The primary chamber has two (2) dual fuel Maxon 3" Multifire II burners rated at 1.5 Million British Thermal Units per hour (MM BTU/hr) each. The burners will function using either natural gas or No. 2 oil as a fuel source. The secondary chamber has one (1) dual fuel Maxon 4" Multifire II burner rated at 2.5 MM BTU/hour. All burners have Protectifier flame safeties on the pilots and a 20:1 throttleable and proportional control.

A total of three liquid injection nozzles are located on the primary combustion chamber. Each nozzle was designed to handle specific waste(s) and they are identified as numbers 1, 2 and 3 (Appendix B, Figure 2). Nozzle #1 was dedicated for the wax/solvent mixture. Nozzle #2 was dedicated for the cyanide or zyglol solutions. Nozzle #3 was dedicated for the blended oils waste stream.

Combustion products from the incinerator are ducted in refractory lined flue piping to an Eclipse Model 3 HRW waste heat boiler which generates hot water. A pitot tube with indicator is located in the duct to indicate combustion gas velocity. Generated hot water is cooled in a tube and shell heat exchanger with the cooling water being diverted to a NPDES permitted cooling water discharge.

From the waste heat boiler, combustion products are then ducted in unlined flue piping to a Hydronics Model VS 72 venturi scrubber and a Hydronics Model PTS 72 packed tower counterflow scrubber operating with caustic wash. Both scrubbers are fabricated of stainless steel and the tower contains polypropylene Tellerette packing. To protect the packing there is a thermocouple and temperature switch in the inlet duct that will shut down the incinerator before the packing has any thermal damage. There is also a liquid manometer across the venturi scrubber to indicate pressure drop. The pressure drop is used as an indication of air velocity and scrubber efficiency. The venturi scrubber is designed for particulate removal while the packed tower has high gas/liquid area for removing fine particulate and neutralizing acids in the waste gas stream. At the exit of the scrubbers is a demister system to remove liquid entrainment in the waste gas stream. The caustic wash is contained in a 400 gallon tank and circulated through the scrubbers at 65 gallons per minute (gpm). The pH is controlled at 7.0-8.5 by the addition of liquid sodium hydroxide.

The air from the demisters is ducted through a damper system to one of two prime air movers. These air movers are New York Blower Series 45 G1 fans, size 264 with 60 horse-power motors rated at 4000 cubic feet per minute (cfm) at 37" water. One blower is the prime mover with the second used as a back-up.

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

The exhaust system operates as an induced draft system, indicating the entire system operates under constant negative pressure conditions. As such, air is only pulled into the ducts, as opposed to forced emissions from the ductwork to the exhaust stack.

4.0 PERMITTING HISTORY

On September 19, 1979 Pratt & Whitney submitted an application to the Connecticut Department of Environmental Protection (DEP) Air Compliance Unit to construct a liquid injection hazardous waste incinerator. The permit to construct was granted on August 9, 1980 and construction commenced immediately. The construction was essentially complete in April 1981. Following construction, a series of test burns were conducted at various times to define the operating performance of the unit compared to the DEP regulatory standards. As described in the following section, these performance tests indicated excessive particulate emissions, and the required Construction and Operation permits from the DEP Air Compliance Unit expired while these problems were being investigated. Renewals of these permits were requested and received from the DEP on numerous occasions, as each test burn identified additional performance deficiencies that required further investigation.

As indicated in Section 2.0 the incinerator is included in the RCRA Part A application. The incinerator was also included in the original Part B Permit Application submitted to the DEP in April 1983. Subsequent revisions to this application included updated information on the incinerator and the proposed trial burn plan. The DEP issued Pratt & Whitney the most recent Notice of Deficiency (NOD) on this permit application in October, 1985. Included in this NOD were requests for additional incinerator information. In response, a decision was made to close the incinerator and remove the reference to this unit from the Part B Permit Application.

5.0 TEST BURN HISTORY

A total of four test burns were conducted on the incinerator in an attempt to comply with DEP emission standards. Only the cyanide and the wax/solvent waste streams were used during the test burns. The following is a summary of each test burn and the equipment modifications made following each test burn.

The first test burn was conducted on March 30 and 31, 1982. Both the cyanide and wax/solvent waste streams were tested. The cyanide solution was tested on 3/30/82 over three test runs, approximately one hour in duration each. The waste feed rate averaged 47 gallons per hour (gph) and the total volume of waste burned was approximately 157 gallons. The wax/solvent waste was tested on 3/31/82. Again, three test runs were conducted approximately one hour in duration each. The average waste feed rate was approximately 36 gph and the total volume of waste burned was approximately 136 gallons.

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

In addition to testing incineration emissions, incoming liquid waste samples were collected for both the cyanide and wax/solvent waste streams. Each sample was collected over a 10 minute period from the valve and drain port located in the feed line close to the respective injection nozzle. The analytical results for these samples are presented in Appendix C.

The test burn indicated that the incinerator was unable to meet DEP requirements for particulate emissions. The following equipment modifications were made prior to the next test.

- New injector nozzles were installed to increase waste atomization.
- New burner controls were installed.

A second test burn was conducted on December 14, 1982. Both the cyanide and wax/solvent waste streams were tested on this date with one test run for each waste. The wax/solvent mixture was tested first at a waste feed rate of approximately 49 gph. Approximately 51 gallons were burned. The cyanide waste was tested at a waste feed rate greater than 30 gph. The total amount of cyanide solution burned was greater than 32 gallons.

Test burn results indicated that particulate emissions still exceeded DEP requirements. Over the next 12 months the following system modifications were made:

- A mist eliminator was added to the system
- An insulated exhaust stack was added
- Adjustments were made to the system scrubber and flow meter.

The third test burn was performed on December 12 and 13, 1983. The wax/solvent mixture and cyanide solution were tested on 12/12/83 and 12/13/83 respectively. Similar to the first test burn, each waste was tested over three runs of approximately one hour for each run. The waste feed rates ranged from 41-51 gph for the wax/solvent mixture and 48-50 gph for the cyanide solution. Total volumes ranged from 164-205 gallons for the wax/solvent waste and 187-194 gallons for the cyanide waste.

Again, the incinerator could not meet the DEP requirements for particulate emissions. In early 1984 the consulting engineering firm retained for incineration installation and test burns #1-3 was disengaged. Shortly thereafter, another consulting firm was retained to examine the incinerator train and investigate engineering alternatives to bring the incinerator into regulatory compliance.

The fourth and final test was conducted on May 30, 1984. This test was designed as a diagnostic test to determine the cause of suspected operating deficiencies in the incinerator. The wax/solvent solution was the only waste stream tested in a single test run that spanned

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

nearly five hours. The waste feed rate during the test burn averaged 30 gph with a total waste volume of approximately 150 gallons.

Investigation of the test burn data resulted in noting operating deficiencies in several areas; however, the deficiencies centered on poor combustion chamber operation and inadequate scrubber performance. The synergistic effects of all deficiencies resulted in a recommendation that significant equipment add-ons would be necessary to bring the incinerator into regulatory compliance.

A decision was made in the first quarter of 1985 to postpone pursuing an incinerator modification program and the accompanying test burn. By the fall of 1985 Pratt & Whitney decided to abandon the incinerator permitting process and began pursuing incinerator closure alternatives.

6.0 REFRACTORY SAMPLING HISTORY

Following the decision to pursue closure of the incinerator train (fall 1985), environmental sampling was performed on various incinerator train components. The analytical results from this sampling program were intended to serve as the basis for determining the appropriate disposal alternative.

The sampling effort was conducted in mid 1986 and focussed on the refractory lining in the primary and secondary combustion chambers, the tertiary holding chamber, the lined flue piping and the waste heat boiler. A total of 26 discrete sample locations were identified based on visual observations of staining or discoloration. Refer to Appendix D for a diagrammatical and narrative description of each sample location. Samples were collected by scraping the refractory at each location with a small knife. Collected samples were then composited based on their respective location along the incinerator train.

A total of nine samples were submitted for laboratory analysis. Requested analytical parameters include volatile organic compounds, EP toxicity metals, cyanide and pH. The resulting data indicated non-detectable levels of volatile organic compounds and cyanide for all submitted samples. In addition, all samples submitted for EP toxicity metals analyses yielded constituent concentrations below hazardous levels with the exception of the sample submitted from the primary combustion chamber. This sample exhibited the characteristic of EP toxicity for the metal constituent chromium (46.4 ppm). A summary of all EP toxicity metals results and the copies of the laboratory data sheets are included in Appendix D.

7.0 CLOSURE PROCEDURES AND SCHEDULE

As mentioned in Section 2.0, the incinerator has not operated since the last test burn dated May 30, 1984. These four test burns were not long enough to produce significant amounts of hazardous waste

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

residue (ash); consequently, there are no storage tanks or structures at the CWTP dedicated to holding wastes from the incinerator. As such, there will be no need to discuss the operating procedures of the incinerator during closure activities.

The building housing a portion of the incinerator train is currently used for other hazardous waste activities (Appendix B, Figure 3). At present, these activities include limited drum storage, equipment storage and bulk liquid hazardous waste storage under RCRA interim status. As stated in Section 2.0, only the incinerator train will be undergoing closure activities. Upon the completion of closure activities, the building will continue to be used for the bulk storage of hazardous waste.

The incinerator closure process concerns only the incinerator train and the associated waste feed lines. This process includes the disposal of materials deemed hazardous wastes, disposal of hazardous waste residues and the decontamination of areas potentially contacted by incinerator operations. The following detailed procedures will describe this work:

1. Remove any ash from the incinerator, residue from the waste heat boiler (if present) and Tellerette packing from the air pollution control equipment. All ash/residue will be wetted for dust control and removed by shovel, hand trowel or vacuum. The resulting accumulation of ash/residue along with any contaminated disposable clothing will be drummed and treated as hazardous waste. Any tools used during ash/residue removal will be decontaminated using an industrial grade non-phosphate detergent and water solution with a plant tap water rinse. All rinsate will be collected and treated as a hazardous waste liquid at the CWTP.
2. The waste feed lines will be decontaminated using a flushing procedure originating from the pump room located in the basement of the barrel storage building.

The cyanide feed line will be flushed using a three step rinsing process. The first rinse will consist of plant tap water. This will be followed by a dilute sodium hydroxide solution rinse. The third rinse will be with plant tap water. The rinsate following the third rinse will be collected and tested following the procedures and parameters detailed in Sections 10.0 and 11.0. If the rinsate is found to be hazardous then the three step rinsing procedure will be repeated until the plant tap water rinse is determined to be non-hazardous following the criteria in Section 11.0. The cyanide feed line will then be sealed at both ends and abandoned in place.

All rinsate from the cyanide line flushing will be collected and treated as a hazardous waste.

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

As stated in Section 3.0 the only other underground waste feed lines installed were for blended oils. These two lines were never charged with product since blended oil was never burned during test burns. Therefore, the decontamination of these lines will consist of a single rinse of plant tap water. After at least a full volume of water has passed, the rinsate will be collected and tested following the procedures and parameters detailed in Sections 10.0 and 11.0. Although not anticipated, if the rinsate is found to be hazardous then a two step rinsing procedure will be implemented. The first rinse will consist of a non-hazardous biodegradable degreaser and water solution. This will be followed by a plant tap water rinse. The rinsate from the second rinse will be collected and tested as above to determine if it is hazardous. If the rinsate is hazardous then the two-step rinsing process will be repeated until the plant tap water rinse is determined to be non-hazardous. The blended oil feed lines will then be sealed at both ends and abandoned in place.

All rinsate from the blended oil line flushing will be collected and treated as hazardous waste.

3. Disassemble the incinerator train and stockpile pieces in a plastic lined dump trailer or roll-off container. Disassembly will consist of manual dismantling and/or the use of powered equipment. The option is available to use both hot or cold cutting techniques. The size of stockpiled components will be directly influenced by the disposal facilities requirements for landfilling. It is anticipated that all piping will be cut into four foot sections and that larger components will not exceed 10 feet in any dimension. The refractory lining and miscellaneous debris will be stockpiled along with the incinerator train hardware.

Any potential for fugitive dust emissions will be minimized by wetting the incinerator train components during the dismantling. All accumulated wetting agent will be collected by wet vacuum and treated as a hazardous waste.

Prior to dismantling the air pollution control equipment a plastic sheeting barrier will be installed separating this equipment from the active wax/solvent tank. This barrier will serve to segregate the active wax/solvent tank operations from all dismantling and decontamination operations associated with incinerator closure activities.

4. Shotblast or scarify the concrete pad which functions as the footing for the incinerator combustion chambers. The potential for fugitive dust emissions will be minimized by utilizing equipment which immediately contains all generated residue. This residue will be collected, stored

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

and treated as a hazardous waste.

5. Hydroblast the ceiling in the building and the concrete pit which formerly housed the air pollution control equipment. Hydroblasting of the ceiling will proceed to the plastic sheeting barrier which separates the active wax/solvent tank from the incinerator closure activities. Areas that will not be hydroblasted will be covered with plastic sheeting to prevent water damage and cross contamination to clean areas.

The cleaning solution will consist of biodegradable industrial surfactant (i.e. M-Oil Free, Penetone) and water mixture. Spent rinsate will be contained through the use of dikes to prevent wash water migrating into clean areas. This rinsate will be collected using a wet/dry vacuum then stored and treated as a hazardous waste.

6. Decontaminate equipment used during incinerator closure activities. Decontamination of specific equipment will be deemed necessary based on whether the equipment was in direct contact with the incinerator train components, collected ash/residues, or waste feed line and hydroblasting rinsates. As state above, smaller manual tools will be decontaminated using an industrial grade non phosphate detergent and water solution. Larger tools (i.e. lifts, hoists) will be decontaminated by steam cleaning. All rinsate generated during decontamination activities will be collected and treated as hazardous waste.
7. Retain a fully permitted hazardous waste transporter and ship all incinerator train components to a secure landfill disposal facility.
8. Conduct discrete concrete chip sampling of the concrete pad that was formerly used as the footing of the incinerator combustion chambers and the concrete pit formerly holding the air pollution control equipment. Sample methodology and analytical testing will follow the procedures outlined in Sections 10.0 and 11.0.
9. Complete the Certification of Closure as presented in Section 12.0. Within 60 days of completion of all closure activities, the Certification of Closure will be sent by registered mail to the EPA Regional Administrator and the Commissioner of the Connecticut Department of Environmental Protection.

Table 1 presents the estimated timetable to complete all required closure activities described in this section. All dates are contingent upon the completion of the required public notice period and approval of the closure plan occurring at Day 0.

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

TABLE 1

TRACKABLE CLOSURE TIMETABLE

	<u>Estimated Time To Complete Steps</u>	<u>Total Time</u>
Steps 1 to 8	60 Days	60 Days
Certification	30 Days	90 Days
Step 9	90 Days	180 Days

It is expected that all closure activities will be completed in the year 1990. Closure activities may be completed ahead of the timetable outlined in Table 1; however, all closure activities described herein will be completed within 180 days after receiving final approval from EPA/DEP pursuant to 40 CFR Subpart 265.113(b).

8.0 MAXIMUM WASTE INVENTORY

As described in Section 5.0 the incinerator has never operated apart from the four allowed test burns. The wastes relating to incinerator operation include incinerator ash, scrubber waters and scrubber sludges. The amount of each waste generated during the test burns is described below.

1. Incinerator ash - The wastes burned were not high in ash content or burned in sufficient volumes to produce any significant quantities of ash. Any bottom ash produced in the incinerator accumulates in the primary combustion chamber. Visual inspection of this unit resulted in an observation of less than one cubic yard of ash. All ash will be removed from the chamber following the procedures outlined in Section 7.0. No visible quantities of ash have been observed on any other components of the incinerator train. Any ash identified during closure activities will be collected, stored and treated as hazardous waste.
2. Scrubber waters - During the test burns the scrubber waters were kept in the pH range of 7.0 to 8.5. After each test burn all scrubber waters were tested internally for cyanide, chromium and pH. These waters were treated if necessary and then discharged into the NPDES permitted waste water treatment system. Since the incinerator has not been operational since 5/30/84 there is no inventory of scrubber waters to consider during closure activities.
3. Scrubber sludges - The test burn durations were not long enough to produce any scrubber sludges. Therefore, there is no inventory of scrubber sludge to consider during closure activities.

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

9.0 CLOSURE COST ESTIMATE

Closure cost estimates for incinerator closure activities are based on proposed contractor rates available in the local area as of 1989. Approximately six individuals will comprise the working party. The working party includes the site manager, site safety officer, equipment operators and technicians.

Analytical costs for collected aqueous and concrete chip samples are based on local laboratory costs as of 1989. These costs include all QA/QC samples necessary.

Task 1	Mobilization and Site Preparation	\$ 6,000
Task 2	Removal and Disposal of Ash Residue and Scrubber Packing Media	
	A. Labor (1 day)	\$ 2,000
	B. Disposal (4cy. @\$135cy.)	600
	Subtotal	\$ 2,600
Task 3	Waste Feed Line Decontamination	
	A. Labor (1 day)	\$ 2,000
	B. Equipment	200
	C. Disposal (200gal. @\$.50/gal.)	100
	Subtotal	\$ 2,300
Task 4	Incinerator Train Dismantling	
	A. Labor (11 days)	\$45,000
	B. Equipment	15,000
	Subtotal	\$60,000
Task 5	Building Decontamination	
	A. Shotblast/Scarify Concrete Pad	
	1. Labor (.5 day)	\$ 1,000
	2. Equipment	500
	3. Disposal (1cy. @\$135/cy.)	135
	B. Hydroblast Ceiling and Concrete Pit	
	1. Labor (1.5 days)	3,000
	2. Equipment	300
	3. Disposal (200gal. @\$.50gal.)	100
	Subtotal	\$ 5,035

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

Task 6	Sampling and Analytical Program	
	A. Labor (1 day)	\$ 1,000
	B. Rinsate (6 samples)	2,500
	C. Concrete Chip (10 samples)	4,500
	D. Data Validation (1.5 days)	1,000
	Subtotal	<u>\$ 9,000</u>
Task 7	Disposal of Incinerator Train	
	A. Transportation (3 loads @\$4,400/load)	\$13,320
	B. Secure Landfill Disposal (2500c.f. @\$9/c.f.)	22,500
	Subtotal	<u>\$35,820</u>
Task 8	Demobilization	\$ 5,000
Task 9	Closure Certification Connecticut P.E.	\$ 2,000
	Subtotal	<u>\$127,755</u>
	Contingency at 20%	25,551
	Total	<u><u>\$153,306</u></u>

10.0 SAMPLING PROCEDURES

Sampling procedures during incinerator closure activities will pertain to three sample types: drummed ash/residue, waste feed line rinsate and concrete chip samples.

- * Drummed ash/residue - As outlined in Section 6.0 all ash/residue encountered during incinerator closure activities will be collected, stored and treated as hazardous waste. No sampling of drummed ash/residue is proposed; however, if sampling is performed to determine a non-hazardous condition each drum of ash/residue will be sampled separately. Samples will be collected from the drums using a Coliwasa or glass "thief" sample tube. These sampling devices allow a composite sample to be taken covering the entire depth of the drum. All glass sample tubes will be new, and will be discarded immediately after use. The Coliwasa, if used, will be cleaned after each use with an industrial non-phosphate detergent solution, distilled water rinse, hexane rinse, and distilled water rinse in that order.
- * Waste feed line rinsate - Rinsate collected during the waste feed line flushing operations will be collected, stored and treated as hazardous waste unless analytical

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

tests determine a non-hazardous condition. To determine whether flushing operations are complete an effluent sample will be collected directly from the discharge end of the waste feed line. This sample will be collected following the full volume of the waste feed pipeline has been flushed with the final plant tap water rinse. The sample will be collected directly into laboratory supplied glassware.

One influent plant tap water sample will be collected to demonstrate background water quality. This sample will be collected directly from the spigot used for flushing operations after the water is allowed to flow for at least five minutes. The sample will then be collected directly into the laboratory supplied glassware.

The field QA/QC program used during aqueous sampling operations will include trip blanks, field blanks and blind duplicate samples. The trip blank will consist of pre-bottled deionized water that will accompany the laboratory glassware to and from the laboratory. One field blank will be performed at the time of sampling. Laboratory supplied deionized water will be poured directly into 40ml glass vials with teflon lined caps. One blind duplicate sample will be collected from one of the three waste feed lines. Immediately following the primary water sample, a second sample will be collected in the same manner.

- * Concrete Chip Samples - Following the shotblasting/scarifying of the concrete pad that formerly functioned as the footing of the incinerator and hydroblasting the concrete pit which formerly held the air pollution control equipment, concrete chip samples will be collected. A total of two discrete samples will be collected from the concrete pad and one discrete sample will be collected from each wall and floor of the concrete pit. In addition one discrete sample will be collected from the concrete pit to function as background concrete quality. An air chisel or concrete drill will be used to dislodge the concrete chips. The portion of the tool in direct contact with the concrete will be cleaned between samples using an industrial non-phosphate detergent wash and a tap water rinse. The resulting concrete chips will be transferred directly into laboratory supplied glassware. The field QA/QC program for concrete chip samples will consist of one trip blank to accompany the samples to the laboratory.

Immediately following sample collection each sample will be labeled and placed in an iced cooler. The samples will be transported under full chain-of-custody to a State of Connecticut approved laboratory.

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

11.0 TESTING AND DETERMINATION PROCEDURES

A specific analytical parameter list has been developed for all ash/residue, waste feed line rinsate and concrete chip samples collected during incinerator train closure activities. As presented in Table 2 this list is representative of all listed hazardous waste constituents potentially present in the cyanide solution and wax/solvent mixture, the only waste streams burned in the incinerator. In addition, the characteristic hazardous waste parameters of corrosivity and extraction procedure toxicity have been deemed applicable and are therefore included.

TABLE 2

LISTED HAZARDOUS WASTE CONSTITUENT PARAMETERS AND ANALYTICAL METHODS

<u>Parameter</u>	<u>Aqueous</u> (Rinsate)	<u>Solid-Mass Analysis</u> (Concrete chip/ ash/residue)
<u>Metals</u>		
Arsenic	3010/7060	3050/7060
Barium	3010/6010	3050/6010
Cadmium	3010/6010	3050/6010
Chromium (Total)	3010/6010	3050/6010
Chromium VI	-- /7196	-- /7196
Copper	3010/6010	3050/6010
Lead	3010/6010	3050/6010
Mercury	3010/7470	3050/7471
Nickel	3010/6010	3050/6010
Selenium	3010/7740	3050/7740
Silver	3010/6010	3050/6010
<u>Cyanide</u>	-- /9010	-- /9010
<u>Volatile Organic Compounds</u>		
Carbon Tetrachloride	5030/8010	5030/8010
1,1-Dichloroethylene	5030/8010	5030/8010

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

Methylene Chloride	5030/8010	5030/8010
Tetrachloroethylene	5030/8010	5030/8010
1,1,1-Trichloroethane	5030/8010	5030/8010
Trichloroethylene	5030/8010	5030/8010

* 5030/8010 - preparation method / analytical method

The analytical methods presented above have been selected from the third edition of EPA Publication SW-846 - Test Methods for Evaluating Solid Waste. The designated laboratory will follow all applicable internal QA/QC procedures outlined in SW-846.

Upon receipt of the analytical data, an initial evaluation of the results will be performed through data validation. Data validation includes a review of field QA/QC procedures (i.e. trip blanks, field blanks) and laboratory QA/QC procedures (i.e. holding times, blind duplicate analysis, surrogate recoveries). Data points that are not adequately supported by the QA/QC procedures will be referred to the sampling team and/or the laboratory for appropriate corrective actions.

Upon completion of data validation, the results will be compared to background data points and the relevant and appropriate regulatory standards and criteria. An explanation of how this will be performed for each sample media (aqueous or solid) is presented below.

Waste Feed Line Rinsate- As stated in Section 10.0 decontamination of the waste feed lines will be verified through effluent sampling of the third plant tap water rinse. Results from the influent sample will be used as background water quality data and effluent sample results will be compared to this background data point. In addition, effluent results will be compared to available drinking water standards as presented in Appendix E, Table 1. Table 1 has been prepared based on available federal primary, secondary and recommended contamination levels and the State of Connecticut Department of Health Services drinking water action levels.

Decontamination of the waste feed lines will be deemed complete if all effluent sample concentrations fall below the levels indicated in Appendix E, Table 1. If any parameter exceeds the levels in Appendix E, Table 1 but is at or below the influent sample concentration for the same parameter then decontamination is deemed complete. If any parameter exceeds the respective level in Table 1 and the influent sample concentration for that constituent the decontamination efforts must continue as specified in Section 7.0.

Concrete Chip Samples - As stated in Section 10.0, decontamination of the concrete pad and the concrete pit will be demonstrated complete by concrete chip sampling of the material identified to remain following closure activities. Analytical data will be

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

generated for the concrete on a mass analysis basis for all the parameters in Table 2. The hazardous waste characteristic for EP toxicity will be determined by performing the EP toxicity test for selected metals.

Results for the background sample collected in the concrete pit will be used for comparison with other sample results from the concrete pit. However, due to the limited size and orientation of the concrete pad, no background sample was proposed and therefore no comparison can be made.

EP toxicity test results will be compared to the regulatory levels pursuant to 40 CFR Subpart 261.3. If any parameter exceeds the applicable regulatory level then decontamination will be deemed incomplete in the area of that sample. If this circumstance occurs on any sample from the concrete pad then the contingency will be activated whereby the entire pad will be removed and treated as a hazardous waste. If this circumstance occurs for any sample collected in the concrete pit, decontamination efforts will continue until followup sample data achieves the regulatory levels pursuant to 40 CFR Subpart 261.3.

In addition to the EP toxicity evaluation, data evaluation against health based risk levels for detected contaminants will be performed. This evaluation will only be performed for parameters that have health based risk levels associated with them. The available health based risk levels have been obtained from EPA Publication SW-87-001 RCRA Facility Investigation Guidance and are presented in Appendix E, Table 2. Evaluation will consist of comparing identified constituents levels to available background levels and to health-based risk levels. Decontamination efforts will be deemed incomplete if constituent levels exceed health based risk levels except materials that demonstrate such levels but are consistent with ambient background levels. Decontamination efforts must continue until followup sampling demonstrates that parameters are at or below health based risk standards or are consistent with background levels. Any concrete chip sampling areas which exhibit levels consistent with background and either above or below health based risk levels will be considered representative of ambient background levels thus decontamination efforts will be deemed complete.

12.0 CERTIFICATION OF CLOSURE

The certification statement presented below will be sent via registered mail to the EPA Regional Administer and the Commissioner of the Connecticut DEP within 60 days of the completion of closure pursuant to 40 CFR Subpart 265.120.

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

CERTIFICATION OF CLOSURE

"I, _____, for Pratt & Whitney Group, United
(Name)

Technologies Corporation, owner and operator of the hazardous waste
incinerator at 400 Main Street, East Hartford, and

I, _____, P.E., employed
(Name)

by _____, certify by means of our
(Firm)

signatures, that the incinerator named above has been closed in
accordance with the method specified by the closure plan
dated _____, and attached hereto. Closure was completed
on _____.

(Date)

Pratt & Whitney Group

P.E.

Title

Firm

Date

Date

APPENDIX A

SITE HEALTH AND SAFETY PLAN

A job specific health and safety plan has been developed for activities to be performed during the closure of the Burn-Zol liquid hazardous waste incinerator located at United Technologies - Pratt & Whitney in East Hartford, Connecticut. The plan addresses the anticipated operating conditions during closure activities and the personal protection strategies available for all field team members.

The health and safety plan is designed to function as a general outline for the contractor conducting closure activities. Specific information relating to the dates of closure activities and individual field team members have been left blank. This plan may be superceded by a contractor specific health and safety plan; however, the plan must meet or exceed the general requirements set forth as follows.

SITE HEALTH & SAFETY PLAN

A. GENERAL INFORMATION

SITE: United Technologies - Pratt & Whitney
LOCATION: 400 Main Street, East Hartford, CT 06108
PREPARED BY: Scott L. Singer
JOB SCOPE OF WORK: Incinerator Closure (dismantling)
PROPOSED DATE OF JOB: _____

B. SITE/HAZARD OVERVIEW

<u>APPARENT HAZARD:</u>	<u>TYPE OF FACILITY:</u>	<u>STATUS OF FACILITY</u>
Serious _____	Lagoon _____	Active _____
Moderate _____	Dump/LF tank _____	Inactive <u>X</u>
Low <u>X</u>	Open Bldg _____	Unknown _____
None _____	Other <u>Incinerator</u>	

<u>WASTE TYPE(S)</u>	<u>WASTE CHARACTERISTICS</u>	<u>TYPE/Form OF HAZARDS</u>
Gas _____	Toxic <u>X</u>	Dust <u>X</u>
Liquid <u>X</u>	Corrosive _____	Liquid _____
Sludge _____	Ignitable _____	Fumes _____
Solid <u>X</u>	Volatile _____	Vapors <u>X</u>
Unknown _____	Radioactive _____	Contact _____
Other _____	Reactive <u>X</u>	Other _____
	Unknown _____	IDLH _____

The following substance(s) are known or suspected to be on site. The primary hazards of each are identified.

<u>SUBSTANCES INVOLVED</u>	<u>CONCENTRATIONS</u>	<u>PRIMARY HAZARD</u>
<u>Incinerator Ash (CN, Metals)</u>	<u>Unknown</u>	<u>Inhalation</u>
<u>Waste feed line Rinsate (CN, Metals)</u>	<u>Unknown</u>	<u>Ingestion, direct contact</u>
<u>Refractory brick (Cr)</u>	<u>See Appendix D</u>	<u>Inhalation</u>
<u>Wax/solvent Tank (VOCs)</u>	<u>See Appendix C</u>	<u>Inhalation</u>

The following additional hazards are expected on site: _____

Hazardous substance information form(s) for the involved substance(s) have been completed and are attached.

C. SITE DESCRIPTION AND HISTORY

BRIEF DESCRIPTION Incinerator located at the Concentrated Waste Treatment Plant. Reference Appendix B, Figure 3 for current layout.

SKETCH/MAP ATTACHMENT A.

HISTORY A total of four test burns conducted from 1982-1984. Incinerator has been inactive since the last test burn dated 5/30/84.

D. ON-SITE CONTROL

Contractor _____ has been designated to coordinate access control and security on site. A safe perimeter has been established at the
incinerator building entrance.

No unauthorized person should be within this area. Control boundaries have been established, and the exclusion zone (the contaminated area, hotline, contaminated reduction zone, and support zone [clean area]) have been identified and designated as follows:

exclusion zone-incinerator building, hotline-building entrance

reduction and support zone-outside of incinerator building

These boundaries are identified by: the walls of the incinerator building. If necessary, expansion of the exclusion zone will be coordinated by the contractor.

E. ON-SITE PERSONNEL

SITE MANAGER: Contractor

SITE SAFETY OFFICER: Contractor

PRATT & WHITNEY REPRESENTATIVE: Scott Singer

REGULATORY AUTHORITY: EPA/CT DEP

FEDERAL AGENCY REPS: Mr. Stephen Yee EPA Region I

STATE AGENCY REPS: Mr. George Dews CT DEP

LOCAL: N/A

WORK PARTY(S) CONSISTING OF AT LEAST 2 PERSONS WILL PERFORM TASKS.

PARTY TEAM LEADER: _____

WORK PARTY #1 _____

WORK PARTY #2 _____

RESCUE TEAM (required if entries made to IDLH environment)

DECON TEAM: _____

The work party(s) were briefed on the contents of this plan at:

(Time) _____ on (Date) _____

MONITORING/SURVEILLANCE EQUIPMENT

HNU _____ METAL DETECTOR _____
OVA/GC _____ EXPLOSIMETER _____
DRAEGER TUBES _____ O₂ DETECTOR _____
RADIATION SURVEY
METER _____

NOTES: _____

F. GENERAL SAFETY REQUIREMENTS

The following General Safety Procedures shall be followed by all persons entering and/or working on the site:

All members of the working partying will be familiar with the contents of this Health & Safety Plan. At the beginning of each working day a safety meeting will be held to summarize the previous day(s) progress and to outline the days activities with respect to safety and health.

- No contractor or subcontractor may be allowed on site during work activities without the prior knowledge and consent of the site Manager and/or Safety Officer.
- There will be no activities conducted on site without sufficient backup personnel. At a minimum, two persons must be present at the site.
- All contractor or subcontractor personnel shall bring to the attention of the site Health and Safety Officer or Supervisors any unsafe condition or practice associated with the closure activities that they are unable to correct themselves.
- There will be no smoking, eating, chewing gum, or drinking in the restricted area.
- Hands shall be thoroughly cleaned prior to smoking, eating or other activities outside the restricted area.
- Team members must avoid unnecessary contamination (i.e., walking through known or suspected "hot" zones or contaminated puddles, kneeling or sitting on the ground, leaning against potentially contaminated barrels or equipment).
- Respiratory devices may not be worn with beards, long sideburns, or under other conditions that prevent a proper seal.

- Respiratory devices must not be worn with contact lenses.
- No visitors will be allowed access without the knowledge and consent of the Site Manager and/or Safety Officer. All visitors will be required to be briefed on safety procedures and will be required to be escorted while on site.

G. COMMUNICATION PROCEDURES

Attached when applicable used with IDLH atmospheres.

H. PERSONAL PROTECTIVE EQUIPMENT

Based on evaluation of potential hazards, the following levels of personal protection have been designated for the applicable work areas or tasks.

<u>LOCATION</u>	<u>JOB FUNCTION</u>	<u>LEVEL OF PROTECTION</u>
Exclusion Zone	Incinerator dismantling	A B C <u>④</u> Other
	Refractory ash handling	A B <u>③</u> D Other
Contamination	_____	A B C D Other
Reduction Zone	Decontamination	A B C <u>④</u> Other

Additional Protective Equipment for each level of protection is as follows:

Level A _____

Level B _____

Other _____

Level C air purifying respirator,

coveralls, gloves, boots, hard

hat

Level D coveralls, gloves, boots,

hard hat

I. DECONTAMINATION PROCEDURES

Personnel and equipment leaving the Exclusion Zone shall be thoroughly decontaminated.

The following decontamination equipment is required:

wash tubs, brushes, non-phosphate detergent, trash barrels,

steam cleaner

Non-phosphate detergent & water will be used as the decontamination solution.

J. EMERGENCY INFORMATION

<u>LOCAL RESOURCES</u>	<u>PHONE #</u>	<u>CONTACT</u>
Ambulance	911	--
Hospital Emergency Room	524-2525	Hartford Hospital
Fire Department	528-4173	--
Police Department	528-4401	--
Local Regulatory Authority	566-2264	Mr. George Dews (DEP)
Reg. Regulatory Authority	(617) 573-9644	Mr. Stephen Yee (EPA)

K. EMERGENCY MEDICAL CARE

The following are qualified on-site First Aiders, EMT's:

EMERGENCY ROUTES - Hospital Willow St., - Rte. 2 North - Rte. 5 South -
left on Prospect St. - Right on Charter Oak Ave. - left on Main St. -
right on Jefferson Street - left on Seymour Street

First Aid equipment is available on-site at the following locations:

FIRST AID KIT Contractor

EMERGENCY EYE WASH Contractor

EMERGENCY SHOWER _____

OTHER (Specify) _____

SITE RESOURCE(S) LOCATIONS

WATER SUPPLY Concentrated Waste Treatment Plant

TELEPHONE(S) Concentrated Waste Treatment Plant

COMMUNICATION SYSTEMS --

OTHER _____

L. ENVIRONMENTAL MONITORING

The following environmental monitoring instruments shall be used on-site at the specified intervals.

Combustible Gas Indicator - Continuous Daily Hourly Other _____

O₂ Monitor - Continuous Daily Hourly Other _____

Collorimetric Tubes - Continuous Daily Hourly Other _____

HNU-OVA - Continuous Daily Hourly Other _____

Other _____

M. EMERGENCY PROCEDURES

(These procedures should be modified as required for incident)

The following standard emergency procedures will be used by on-site personnel. The Site Manager/Safety Officer shall be notified of any on-site emergencies and be responsible for ensuring that the appropriate procedures are followed.

Personnel Injury in the EXCLUSION ZONE: Upon notification of an injury in the Exclusion Zone, the designated emergency signal shall be sounded. All site personnel shall assemble at the decontamination line. The rescue team will enter the Exclusion Zone (if required) to remove the injured person to the hotline. The Site Safety Officer and Project Team Leader should evaluate the nature of the injury, and the affected person should be decontaminated to the extent possible prior to movement to the Support Zone. The on-site EMT/or First Aider shall initiate the appropriate first aid, and contact should be made for an ambulance with the designated medical facility (if required). No persons shall reenter the Exclusion Zone until the cause of the injury or symptoms is determined.

Personnel Injury in the SUPPORT ZONE: Upon notification of an injury in the Support Zone, the Project Team Leader and Site Safety Officer will assess the nature of the injury. If the cause of the injury or loss of the injured person does not affect the performance of site personnel, operations may continue, with the on-site EMT/or First Aider initiating the appropriate first aid and necessary follow-up as stated above. If the injury increases the risk to others, the designated emergency signal shall be sounded and all site personnel shall move to the decontamination line for further instructions. Activities on-site will stop until the added risk is removed or minimized.

Fire/Explosion: Upon notification of a fire or explosion on-site, the designated emergency signal shall be sounded and all site personnel assembled at the decontamination line. The fire department shall be alerted and all personnel moved to a safe distance from the involved area.

Personal Protective Equipment Failure: If any site worker experiences a failure or alteration of protective equipment that affects the protection factor, that person and his/her buddy shall immediately leave the Exclusion Zone. Re-entry shall not be permitted until the equipment has been repaired or replaced.

Other Equipment Failure: If any other equipment on-site fails to operate properly, the Project Team Leader and Site Safety Officer shall be notified and then determine the affect of this failure on continuing operations on-site. If the failure affects the safety of personnel or prevents completion of the Work Plan tasks, all personnel shall leave the Exclusion Zone until the situation is evaluated and appropriate actions taken.

The following emergency escape routes are designated for use in those situations where egress from the exclusion zone cannot occur through the decontamination line: any available exit from the incinerator building

In all situations, when an on-site emergency results in evacuation of the Exclusion Zone, personnel shall not re-enter until:

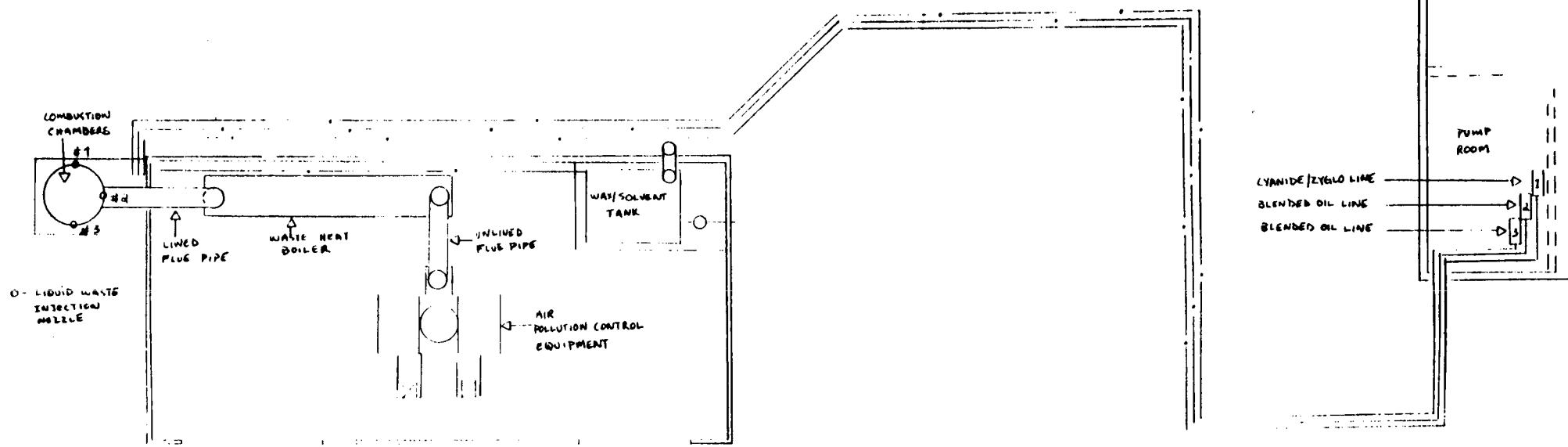
- 1) The conditions resulting in the emergency have been corrected.
- 2) The hazards have been reassessed.
- 3) The site safety plan has been reviewed.
- 4) Site personnel have been briefed on any changes in the Site Safety Plan.

s-s2u 1989

APPENDIX B

FIGURES AND PLATES

PE - - - B



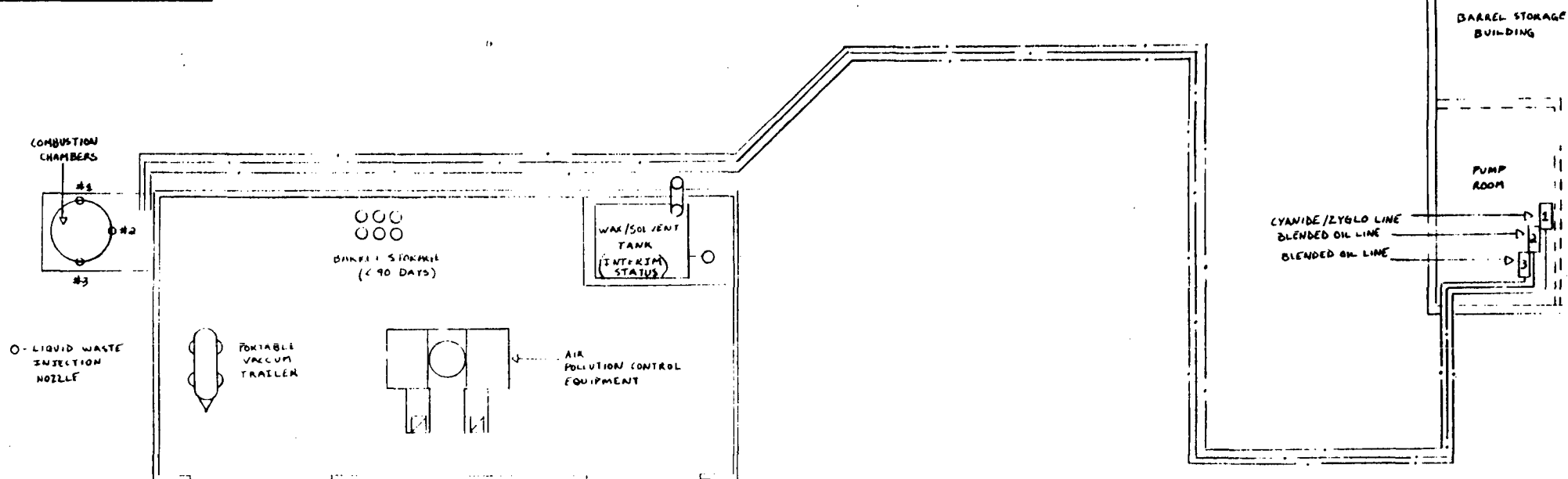
REV.	DESCRIPTION OF REVISION	DATE	DR. BY	APPR.
FIGURE 2		LOCATION		
INCINERATOR SKETCH LAYOUT - PRE 1988		CWTP		
		SCALE		
		NOT TO SCALE		
		DRAWN BY	DATE	
		SLS	6/22/89	
		CHK BY	DATE	
		APP BY	DATE	
		JOB ORDER NO.		
		DRAWING NO.		
		PE - - - B		
		SHEET	NO. OF	
		1	1	

PRATT & WHITNEY
AIRCRAFT GROUP
 Manufacturing Division
 PLANT ENGINEERING DEPARTMENT
 EAST HARTFORD, CONNECTICUT 06108, U.S.A.



PWA 72879-REV 5-77

PE - - B



O - LIQUID WASTE INJECTION NOZZLE

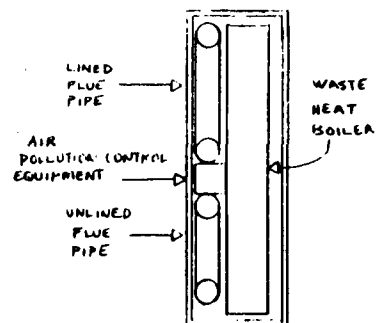
PORTABLE VACUUM TRAILER

AIR POLLUTION CONTROL EQUIPMENT

BARREL STORAGE BUILDING

PUMP ROOM

CYANIDE/ZYGLO LINE
BLENDED OIL LINE
BLENDED OIL LINE



REV.	DESCRIPTION OF REVISION	DATE	DR. BY	APPR
FIGURE 3 INCINERATOR SKETCH LAYOUT AS OF JUNE 22, 1989		LOCATION CWTP SCALE NOT TO SCALE		
		DRAWN BY SLS	DATE 6/22/89	
		CKD BY	DATE	
		APP BY	DATE	
		JOB ORDER NO.		
		DRAWING NO.		
		PE - - B		
		SHEET NO.	NO OF SHEETS	

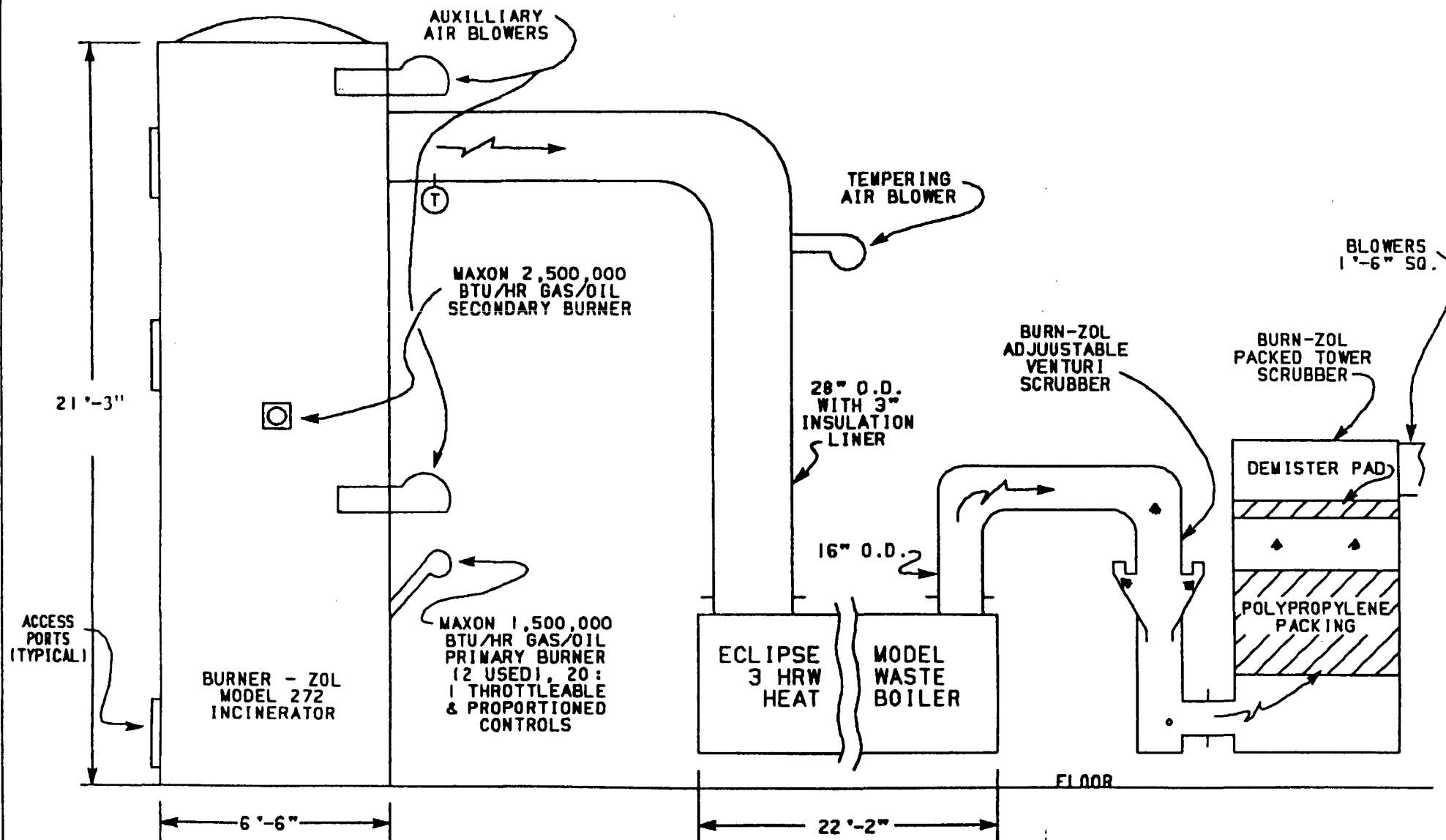
PRATT & WHITNEY
AIRCRAFT GROUP
Manufacturing Division
PLANT ENGINEERING DEPARTMENT
EAST HARTFORD, CONNECTICUT 06108, U.S.A.



HAZARDOUS WASTE INCINERATION SYSTEM

INSTALLED AT
PRATT & WHITNEY, EAST HARTFORD, CONN.

FIGURE 4 Incinerator Train Diagram



NOTE: A 1,200 ACFM COMBUSTION AIR
FLOWER SPEEDS THE 2-1/2 MINUTE RESIDENCE



PLATE 1

View looking south 6/23/89. The building currently housing the active wax/solvent storage tank and the air pollution control equipment. Note the combustion chamber on the left side of the building and the exhaust stacks located on top of the building

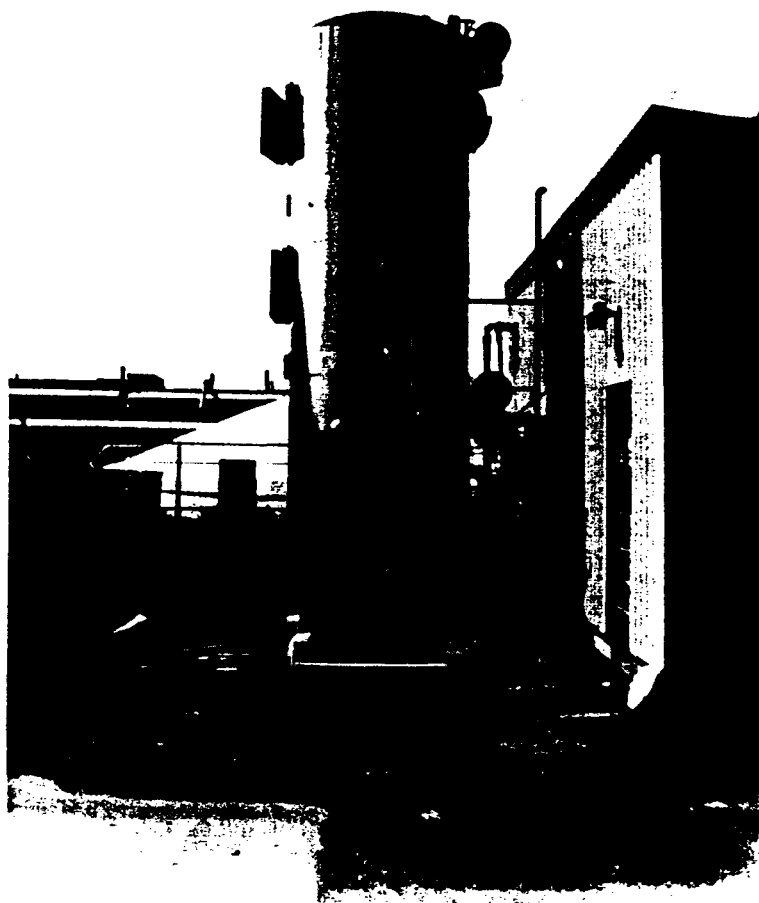


PLATE 2

View looking south 6/23/89. Primary and secondary combustion chambers, the tertiary holding chamber and the associated above ground plumbing. Lined flue piping to the waste heat boiler was removed in 1988 and is now stored in a separate enclosure (Plates 3 and 4).



PLATE 3

View looking north 6/21/89. Incinerator train components in center of the photograph. Note the dedicated enclosure for these components on the right side of the photograph.

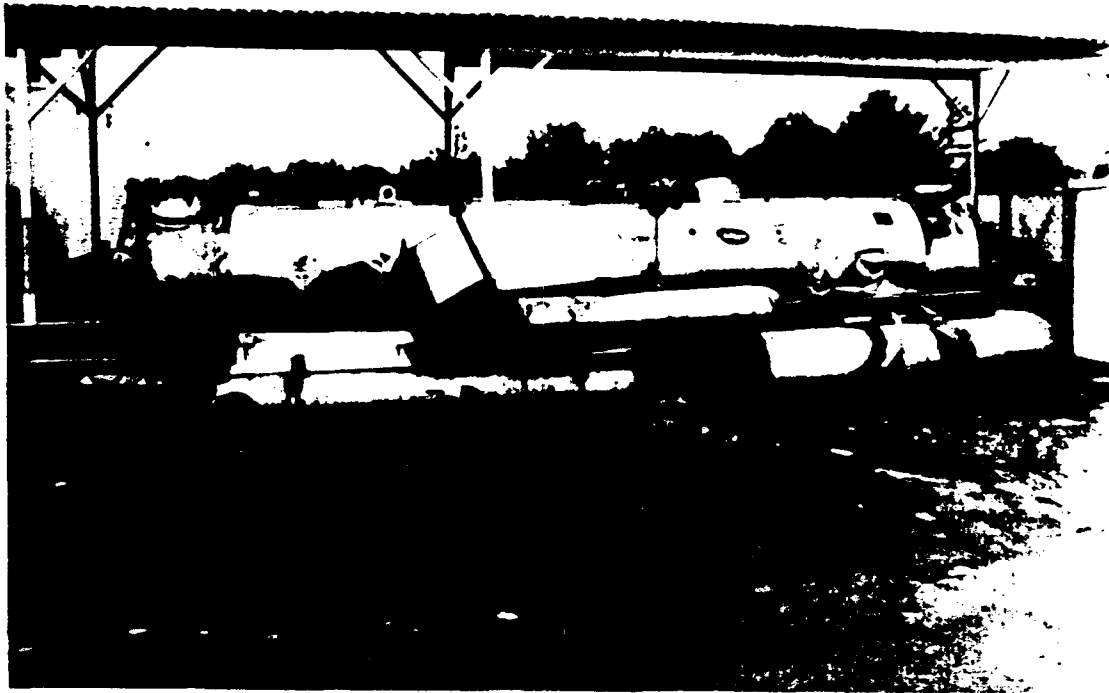


PLATE 4

View looking west 6/21/89. Closeup of incinerator train components removed in 1988. Components include the waste heat boiler (22 feet long), the heat exchanger (bottom left), the lined and unlined flue piping and a portion of the air pollution control equipment.



PLATE 5

View inside the incinerator building 6/23/89. The air pollution control equipment is housed in a concrete pit and protected by railings.

APPENDIX C

WASTE STREAM ANALYTICAL DATA

THE MINGES

ENVIRONMENTAL LABORATORY

Lawton S. Averill, Laboratory Director

A division of The Minges Associates,
11 Avon Park North, P.O. Box 657, Avon, CT 06001
203-677-2200

Catherine M. Pintavalle, Ch.
Tara L. Vander Els, Ch.

December 19, 1983

Pratt & Whitney Aircraft
Maintenance Building
Mail Stop 122-12
East Hartford, CT 06108

Att: William Chudzik

Re: Analysis of "Cyanide" Sample
and "Solvent" Sample

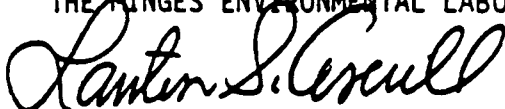
Dear Mr. Chudzik:

Enclosed are results on the cyanide sample #112-55-64, Newlands No. 351 L3 and solvent sample #112-55-62, Newlands No. 387 J3. I hope the results are sufficient at this time.

If further analysis is needed on the wax solvent mixture, another sample is needed.

Very truly yours,

THE MINGES ENVIRONMENTAL LABORATORY



Lawton S. Averill

LSA:lj
Encl.

THE MINGES ENVIRONMENTAL LABORATORY

Lawton S. Averill, Laboratory Director

A division of The Minges Associates, Inc.
11 Avon Park North, P.O. Box 657, Avon, CT 06001
203-677-8309

Catherine M. Pintavalle, Chemist
Tara L. Vander Els, Chemist

REPORT ON LABORATORY EXAMINATIONS

To Client: Pratt & Whitney Aircraft
Maintenance Bldg. - Mail Stop 122-12
East Hartford, CT 06108

Date: November 15, 1983

SAMPLE DATA: Att: W. Chudzik

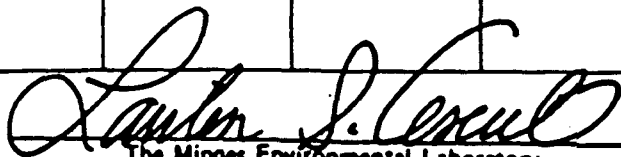
Collected By: Pratt & Whitney Aircraft

SAMPLE NO.	DESCRIPTION OF SAMPLE
112-55-64	Sample labeled "Cyanide" and received October 7, 1983

LABORATORY FINDINGS:

(milligrams per liter, mg/l, except as noted)

ANALYSIS FOR	SAMPLE NO.				
	112-55-64				
Cyanide Total	21,300				
<u>Metals</u>					
Aluminum	51				
Cadmium	6020				
Chromium, Total	4.3				
Copper	940				
Nickel	286				
Zinc	11				
Oil and Grease	48				


The Minges Environmental Laboratory

COPY

THE NEWLANDS SANITARY LABORATORY

Sanitary, Chemical and Bacteriological Investigations

24 TOBEY ROAD
BLOOMFIELD, CONN. 06002
TEL. (203) 242-6291

December 19, 1983

Minges Associates, Inc.
16 Avon Park North
Avon, Conn. 06001

Attn: Mr. Lawton Averill

Gentlemen:

We have the following to report on the sample submitted to this laboratory on October 7, 1983.

Sample No.	38733
Mark	Solid/liquid sample 112-55-62
<u>Infrared</u>	
Solid	parrafin wax
Liquid	Water 85% Perchloroethylene 15%
<u>Total Organic Carbon</u>	
Solid	64.8%
Liquid	2.21%

Visual Examination

This material is approximately 20% liquid and 80% solid.

Very truly yours,

THE NEWLANDS SANITARY LABORATOR

Thomas D. Lee

Thomas D. Lee
Laboratory Director

TDL/cas

COPY

THE NEWLANDS SANITARY LABORATORY

Sanitary, Chemical and Bacteriological Investigations

24 TOBEY ROAD
BLOOMFIELD, CONN. 06002
TEL. (203) 242-6291

December 19, 1983

Minges Associates, Inc.
16 Avon Park North
Avon, Conn. 06001

Attn: Mr. Lawton Averill

Gentlemen:

We have the following to report on the sample submitted to this laboratory on December 8, 1983.

Sample No.

351L3

Mark

Liquid sample
2% Cyanide
112-55-64

PURGEABLE ORGANICS:

Methylene Chloride	less than 100 ppb
1,1 Dichloroethylene	less than 100 ppb
1,1 Dichloroethane	less than 100 ppb
t-1,2 Dichloroethylene	less than 100 ppb
Chloroform	less than 100 ppb
1,2 Dichloroethane	less than 100 ppb
Bromodichloromethane	less than 100 ppb
1,1,1 Trichloroethane	less than 100 ppb
Carbon Tetrachloride	less than 100 ppb
1,1,2 Trichloroethylene	less than 100 ppb
Chlorodibromomethane	less than 100 ppb
Bromoform	less than 100 ppb
1,1,2,2 Tetrachloroethylene	less than 100 ppb

Very truly yours,

THE NEWLANDS SANITARY LABORATORY

Thomas D. Lee
Thomas D. Lee
Laboratory Director

TDL/cas

COPY

THE NEWLANDS SANITARY LABORATORY

Sanitary, Chemical and Bacteriological Investigations

24 TOBEY ROAD
BLOOMFIELD, CONN. 06002
TEL. (203) 242-6291

December 19, 1983

Minges Associates, Inc.
16 Avon Park North
Avon, Conn. 06001

Attn: Mr. Lawton Averill

Gentlemen:

We have the following to report on the sample submitted to this laboratory on December 8, 1983.

Sample No.	351L3
Mark	Liquid sample 2% Cyanide 112-55-64
Total Organic Halides (TOX)	less than 10 ppb
Total Organic Carbon (TOC)	38.82 gms/Liter

Very truly yours,

THE NEWLANDS SANITARY LABORATORY

Thomas D. Lee
Thomas D. Lee
Laboratory Director

TDL/cas

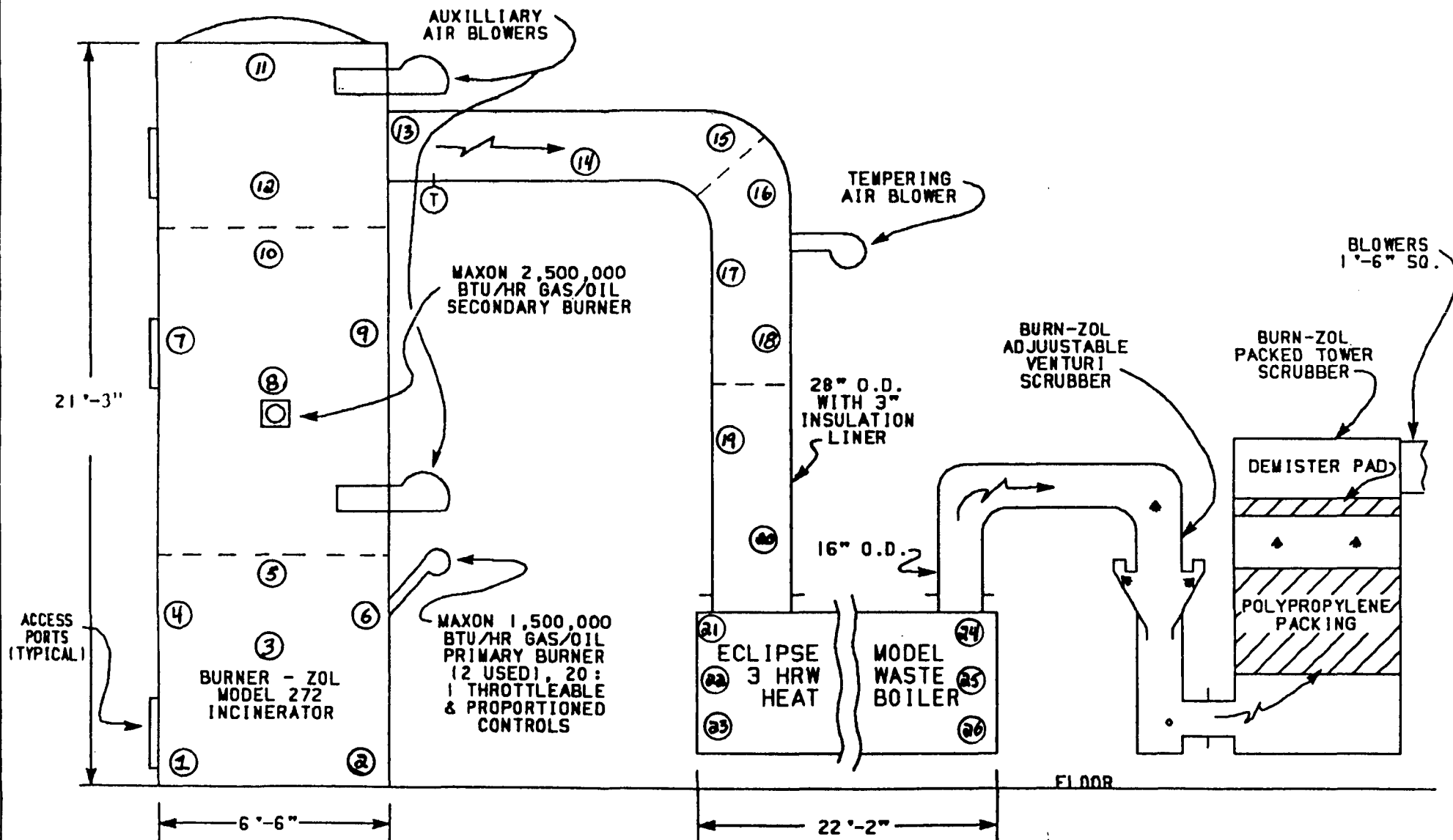
APPENDIX D

REFRACTORY SAMPLING LOCATIONS
AND ANALYTICAL DATA

HAZARDOUS WASTE INCINERATION SYSTEM

INSTALLED AT
PRATT & WHITNEY, EAST HARTFORD, CONN.

REFRACTORY SAMPLING LOCATIONS



NOTE: A 1,200 ACFM COMBUSTION AIR
BLOWER FEEDS THE 2 INCINERATOR BURNERS

REFRACTORY SAMPLE DESCRIPTION AND COMPOSITE INFORMATION

See accompanying diagram for further location information. Those samples which are in a continuous block under the location heading below were composited for analysis.

<u>Sample #</u>	<u>Location</u>
1	On hearth in front of access door.
2	On hearth under cyanide injection port.
3	Incinerator primary chamber- north wall.
4	Incinerator primary chamber- west wall above and around the cyanide injection port.
5	Incinerator primary chamber- around and above the solvents injection port.
6	Incinerator primary chamber- above the access port.
7	Secondary chamber above the access port.
8	Secondary chamber on north wall.
9	Secondary chamber on west wall.
10	Secondary chamber on south wall opposite secondary burner and ducted air flow.
11	Tertiary chamber on south wall and south half of dome.
12	Tertiary chamber on north wall and north half of dome.
13	Horizontal crossover pipe one foot from incinerator end.
14	Horizontal crossover pipe- center.
15	Horizontal crossover pipe one foot from the boiler end.
16	Pipe section on airflow impact surface of the elbow- west side.
17	Elbow section on east side two feet up from boiler end.
18	Elbow section- west side.
19	Boiler inlet pipe on east side two feet down from top of pipe section.
20	boiler inlet pipe on west side two feet up from boiler inlet.
21	South side of boiler inlet section.
22	North side of boiler inlet section.
23	Bottom of boiler inlet section.
24	South side of boiler exit section.
25	North side of boiler exit section.
26	Bottom of boiler exit section.

REFRACTORY COMPOSITE SAMPLE RESULTS

<u>Composite of samples</u>	<u>As</u>	<u>Ba</u>	<u>Cd</u>	<u>Cr</u>	<u>Pb</u>	<u>Hg</u>	<u>Se</u>	<u>Ag</u>	<u>Cn</u>
1 and 2	<0.01	<0.2	0.015	46.4	0.06	<0.002	0.009	0.07	0.000
3,4,5,6	0.009	<0.2	0.11	1.1	0.00	<0.002	<0.01	0.01	0.000
7,8,9,10	<0.01	<0.2	0.008	0.23	0.00	<0.002	<0.01	0.003	0.000
11,12	<0.01	<0.2	0.007	0.56	0.00	<0.002	<0.01	0.000	0.000
13,14,15	<0.01	<0.2	0.13	0.50	0.00	<0.002	<0.01	0.003	0.000
16,17,18	<0.01	<0.2	0.08	0.51	0.00	<0.002	<0.01	0.024	0.000
19,20	<0.01	<0.2	0.032	0.44	0.03	<0.002	<0.01	0.023	0.000
21,22,23	<0.01	<0.2	0.59	0.17	0.17	<0.002	<0.01	0.12	0.000
24,25,26	<0.01	<0.2	0.15	0.01	0.02	<0.002	<0.01	0.018	0.000

AVERILL ENVIRONMENTAL LABORATORY INC

P.O. Box 474, Riverdale Farms
Route 10N, Avon, CT 06001
(203) 677-6283

Lawton S. Averill, Co-Director

Paul C. Clark, Organic Supervisor

Eric W. Snyder, Inorganic Supervisor

Catherine M. Pintavalle, Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Pratt & Whitney
East Hartford, CT 06108

Date: June 27, 1986

SAMPLE DATA:

Collected By: Pratt & Whitney

Samples from Incinerator at Concentrated Waste Treatment Plant, Pratt & Whitney, East Hartford

SAMPLE NO.	DESCRIPTION OF SAMPLE
289-23-955	Sample #1, East Hearth, Inc. 6-16-86.
289-23-956	Sample #2, West Hearth, Inc. 6-16-86.
289-23-955	Composite of Sample Nos. 289-23-955 and 289-23-956 by weight.
Comp.	
289-23-955	100 grams of Sample No. 289-23-955 Comp. mixed with distilled water and
Comp. E	400 ml. of 0.5N acetic acid to a total volume of 2000 ml., mixed for 24 hrs
	settled and filtered through 0.45 micron filter. Filtrate was tested.
289-23-955	100 grams of Sample No. 289-23-955 Comp. mixed with distilled water to a
Comp. DW	total volume of 2000 ml., mixed for 24 hours, settled and filtered through
	0.45 micron filter. Filtrate was tested.

LABORATORY FINDINGS:

(milligrams per liter, mg/l, except as noted)

ANALYSIS FOR	SAMPLE NO.				
	289-23-955 Comp.		289-23-955 Comp. E		289-23-955 Comp. DW
pH of 10% Slurry	10.7	Tests are mg/l in Filtrate		Tests are mg/l in Filtrate	
		Arsenic	less than 0.01	Chromium, Hexavalent	41.0
		Barium	less than 0.2	Cyanide, Total	0.000
		Cadmium	0.015	pH	10.0
		Chromium, Total	46.4		
		Lead	0.06		
		Mercury	less than 0.002		
		Selenium	0.009		
		Silver	0.07		
		pH	9.2		

cc: Pratt & Whitney
Att: Kevin Vidmar

Lawton S. Averill

The Averill Environmental Laboratory, Inc.

EPA METHOD 601

289-23-955C

Carbon tetrachloride	ND<20
Chlorobenzene	ND<20
1,2-Dichloroethane	ND<20
1,1,1-Trichloroethane	ND<20
1,1-Dichloroethane	ND<20
1,1,2-Trichloroethane	ND<20
1,1,2,2-Tetrachloroethane	ND<20
Chloroethane	ND<20
2-Chloroethyl vinyl ether	ND<20
Chloroform	ND<20
1,2-Dichlorobenzene	ND<20
1,3-Dichlorobenzene	ND<20
1,4-Dichlorobenzene	ND<20
1,1-Dichloroethylene	ND<20
trans-1,2-Dichloroethylene	ND<20
1,2-Dichloropropane	ND<20
trans-1,3-Dichloropropene	ND<20
cis-1,3-Dichloropropene	ND<20
Methylene chloride	ND<20
Chloromethane	ND<20
Bromomethane	ND<20
Bromoform	ND<20
Bromodichloromethane	ND<20
Trichlorofluoromethane	ND<20

Results are in ug/kg (ppb)

EPA METHOD 601

289-23-955C

Dichlorodifluoromethane	ND<20
Dibromochloromethane	ND<20
Tetrachloroethylene	ND<20
Trichloroethylene	ND<20
Vinyl chloride	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co. 272 Pepe's Farm Rd. , Milford, Ct. 06460

AVERILL ENVIRONMENTAL LABORATORY INC

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Catherine M. Pintavalle, Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Pratt & Whitney
East Hartford, CT 06108

Date: June 27, 1986

SAMPLE DATA:

Collected By: Pratt & Whitney

Samples from Incinerator at Concentrated Waste Treatment Plant, Pratt & Whitney, East Hartford

SAMPLE NO.	DESCRIPTION OF SAMPLE
289-23-957	Sample #3, No. Side Pri. Inc., 6-16-86.
289-23-958	Sample #4, West Side Pri. Inc., 6-16-86.
289-23-959	Sample #5, So. Side, Pri. Inc., 6-16-86.
289-23-960	Sample #6, East Side Pri. Inc., 6-16-86.
289-23-957	Composite of Sample Nos. 289-23-957, 289-23-958, 289-23-959 and 289-23-960 by weight.
289-23-957	100 grams of Sample No. 289-23-957 Comp. mixed with distilled water and 400 ml. of 0.5N acetic acid to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.
289-23-957	100 grams of Sample No. 289-23-957 Comp. mixed with distilled water to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.

LABORATORY FINDINGS:

(milligrams per liter, mg./l, except as noted)

ANALYSIS FOR	SAMPLE NO.			
	289-23-957 Comp.		289-23-957 Comp. E	289-23-957 Comp. DW
pH of 10% Slurry	10.9	Tests are mg/l in Filtrate		Tests are mg/l in Filtrate
		Arsenic	0.009	Chromium, Hexavalent
		Barium	less than 0.2	Cyanide, Total
		Cadmium	0.11	pH
		Chromium, Total	1.1	10.1
		Lead	0.00	
		Mercury	less than 0.002	
		Selenium	less than 0.01	
		Silver	0.010	
		pH	5.2	

cc: Pratt & Whitney
Att: Kevin Vidmar

Lawton S. Averill

The Averill Environmental Laboratory, Inc.

EPA METHOD 601

289-23-957C

Carbon tetrachloride	ND<20
Chlorobenzene	ND<20
1,2-Dichloroethane	ND<20
1,1,1-Trichloroethane	ND<20
1,1-Dichloroethane	ND<20
1,1,2-Trichloroethane	ND<20
1,1,2,2-Tetrachloroethane	ND<20
Chloroethane	ND<20
2-Chloroethyl vinyl ether	ND<20
Chloroform	ND<20
1,2-Dichlorobenzene	ND<20
1,3-Dichlorobenzene	ND<20
1,4-Dichlorobenzene	ND<20
1,1-Dichloroethylene	ND<20
trans-1,2-Dichloroethylene	ND<20
1,2-Dichloropropane	ND<20
trans-1,3-Dichloropropene	ND<20
cis-1,3-Dichloropropene	ND<20
Methylene chloride	ND<20
Chloromethane	ND<20
Bromomethane	ND<20
Bromoform	ND<20
Bromodichloromethane	ND<20
Trichlorofluoromethane	ND<20

EPA METHOD 601

289-23-957C

Dichlorodifluoromethane	ND<20
Dibromochloromethane	ND<20
Tetrachloroethylene	ND<20
Trichloroethylene	ND<20
Vinyl chloride	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co. 272 Pepe's Farm Rd. , Milford, Ct. 06460

AVERILL

ENVIRONMENTAL LABORATORY INC

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Catherine M. Pintavalle, Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Pratt & Whitney
East Hartford, CT 06108

Date: June 27, 1986

SAMPLE DATA:

Collected By: Pratt & Whitney

Samples from Incinerator at Concentrated Waste Treatment Plant, Pratt & Whitney, East Hartford

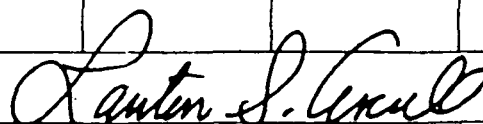
SAMPLE NO.	DESCRIPTION OF SAMPLE
289-23-961	Sample #7, East side Sec. Inc., 6-16-86.
289-23-962	Sample #8, No. side Sec. Inc., 6-16-86.
289-23-963	Sample #9, West side Sec. Inc., 6-16-86.
289-23-964	Sample #10, So. side Sec. Inc., 6-16-86.
289-23-961	Composite of Sample Nos. 289-23-961, 289-23-962, 289-23-963 and 289-23-964 by weight.
289-23-961 Comp. E	100 grams of Sample No. 289-23-961 Comp. mixed with distilled water and 16 ml. of 0.5N acetic acid to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.
289-23-961 Comp. DW	100 grams of Sample No. 289-23-961 Comp. mixed with distilled water to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.

LABORATORY FINDINGS:

(milligrams per liter, mg./l., except as noted)

ANALYSIS FOR	SAMPLE NO.				
	289-23-961 Comp.		289-23-961 Comp. E		289-23-961 Comp. DW
pH of 10% Slurry	6.9	Tests are mg/l in Filtrate		Tests are mg/l in Filtrate	
		Arsenic	less than 0.01	Chromium, Hexavalent	0.51
		Barium	less than 0.2	Cyanide, Total	0.000
		Cadmium	0.008	pH	7.3
		Chromium, Total	0.23		
		Lead	0.00		
		Mercury	less than 0.002		
		Selenium	less than 0.01		
		Silver	0.003		
		pH	4.9		

cc: Pratt & Whitney
Att: Kevin Vidmar



The Averill Environmental Laboratory, Inc.

EPA METHOD 601

289-23-961C

Carbon tetrachloride	ND<20
Chlorobenzene	ND<20
1,2-Dichloroethane	ND<20
1,1,1-Trichloroethane	ND<20
1,1-Dichloroethane	ND<20
1,1,2-Trichloroethane	ND<20
1,1,2,2-Tetrachloroethane	ND<20
Chloroethane	ND<20
2-Chloroethyl vinyl ether	ND<20
Chloroform	ND<20
1,2-Dichlorobenzene	ND<20
1,3-Dichlorobenzene	ND<20
1,4-Dichlorobenzene	ND<20
1,1-Dichloroethylene	ND<20
trans-1,2-Dichloroethylene	ND<20
1,2-Dichloropropane	ND<20
trans-1,3-Dichloropropene	ND<20
cis-1,3-Dichloropropene	ND<20
Methylene chloride	ND<20
Chloromethane	ND<20
Bromomethane	ND<20
Bromoform	ND<20
Bromodichloromethane	ND<20
Trichlorofluoromethane	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co.

EPA METHOD 601

289-23-961C

Dichlorodifluoromethane	ND<20
Dibromochloromethane	ND<20
Tetrachloroethylene	ND<20
Trichloroethylene	ND<20
Vinyl chloride	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co. 272 Pepe's Farm Rd. , Milford, Ct. 06460

AVERILL

ENVIRONMENTAL LABORATORY INC

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Eric W. Snyder, Inorganic Supervisor

Catherine M. Pintavalle, Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Pratt & Whitney
East Hartford, CT 06108

Date: June 27, 1986

SAMPLE DATA:

Collected By: Pratt & Whitney

Samples from Incinerator at Concentrated Waste Treatment Plant, Pratt & Whitney, East Hartford

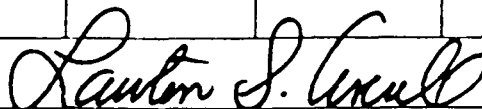
SAMPLE NO.	DESCRIPTION OF SAMPLE
289-23-965	Sample #11, So. side Ter. Inc., 6-16-86.
289-23-966	Sample #12, No. side Ter. Inc., 6-16-86.
289-23-965	Composite of Sample Nos. 289-23-965 and 289-23-966 by weight.
Comp.	
289-23-965	100 grams of Sample No. 289-23-965 Comp. mixed with distilled water and 7.2 ml. of 0.5N acetic acid to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.
Comp. E	
289-23-965	100 grams of Sample No. 289-23-965 Comp. mixed with distilled water to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.
Comp. DW	

LABORATORY FINDINGS:

(milligrams per liter, mg/l, except as noted)

ANALYSIS FOR	SAMPLE NO.				
	289-23-965 Comp.		289-23-965 Comp. E		289-23-965 Comp. DW
pH of 10% Slurry	6.3	Tests are mg/l in <u>Filtrate</u>		Tests are mg/l in <u>Filtrate</u>	
		Arsenic	less than 0.01	Chromium, Hexavalent	0.68
		Barium	less than 0.2	Cyanide, Total	0.000
		Cadmium	0.007	pH	7.7
		Chromium, Total	0.56		
		Lead	0.00		
		Mercury	less than 0.002		
		Selenium	less than 0.01		
		Silver	0.000		
		pH	5.2		

cc: Pratt & Whitney
Att: Kevin Vidmar



The Averill Environmental Laboratory, Inc.

EPA METHOD 601

289-23-965C

Carbon tetrachloride	ND<20
Chlorobenzene	ND<20
1,2-Dichloroethane	ND<20
1,1,1-Trichloroethane	ND<20
1,1-Dichloroethane	ND<20
1,1,2-Trichloroethane	ND<20
1,1,2,2-Tetrachloroethane	ND<20
Chloroethane	ND<20
2-Chloroethyl vinyl ether	ND<20
Chloroform	ND<20
1,2-Dichlorobenzene	ND<20
1,3-Dichlorobenzene	ND<20
1,4-Dichlorobenzene	ND<20
1,1-Dichloroethylene	ND<20
trans-1,2-Dichloroethylene	ND<20
1,2-Dichloropropane	ND<20
trans-1,3-Dichloropropene	ND<20
cis-1,3-Dichloropropene	ND<20
Methylene chloride	ND<20
Chloromethane	ND<20
Bromomethane	ND<20
Bromoform	ND<20
Bromodichloromethane	ND<20
Trichlorofluoromethane	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co.

EPA METHOD 601

289-23-965C

Dichlorodifluoromethane	ND<20
Dibromochloromethane	ND<20
Tetrachloroethylene	ND<20
Trichloroethylene	ND<20
Vinyl chloride	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co. 272 Pepe's Farm Rd. , Milford, Ct. 06460

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REPORT ON LABORATORY EXAMINATIONS

To Client: Pratt & Whitney
East Hartford, CT 06108

Date: June 27, 1986

SAMPLE DATA:

Collected By: Pratt & Whitney

Samples from Incinerator at Concentrated Waste Treatment Plant, Pratt & Whitney, East Hartford

SAMPLE NO.	DESCRIPTION OF SAMPLE
289-23-967	Sample #13, Horiz. Sect. Inc. End, 6-16-86.
289-23-968	Sample #14, Horiz. Sect. Middle, 6-16-86.
289-23-969	Sample #15, Horiz. Sect. Boiler End, 6-16-86.
289-23-967	Composite of Sample Nos. 289-23-967, 289-23-968 and 289-23-969 by weight.
Comp.	
289-23-967	100 grams of Sample No. 289-23-967 Comp. mixed with distilled waer and 11.2 ml. of 0.5N acetic acid to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.
Comp. E	
289-23-967	100 grams of Sample No. 289-23-967 Comp. mixed with distilled water to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.
Comp. DW	

LABORATORY FINDINGS:

(milligrams per liter, mg/l, except as noted)

ANALYSIS FOR	SAMPLE NO.				
	289-23-967 Comp.		289-23-967 Comp. E		289-23-967 Comp. DW
pH of 10% Slurry	6.5	Tests are		Tests are	
		mg/l in		mg/l in	
		Filtrate		Filtrate	
		Arsenic	less than	Chromium,	0.48
			0.01	Hexavalent	
		Barium	less than	Cyanide,	0.000
			0.2	Total	
		Cadmium	0.13	pH	6.3
		Chromium,			
		Total	0.50		
		Lead	0.00		
		Mercury	less than		
			0.002		
		Selenium	less than		
			0.01		
		Silver	0.003		
		pH	5.2		

cc: Pratt & Whitney
Att: Kevin Vidmar

Lawton S. Averill

The Averill Environmental Laboratory, Inc.

EPA METHOD 601

289-23-967C

Carbon tetrachloride	ND<20
Chlorobenzene	ND<20
1,2-Dichloroethane	ND<20
1,1,1-Trichloroethane	ND<20
1,1-Dichloroethane	ND<20
1,1,2-Trichloroethane	ND<20
1,1,2,2-Tetrachloroethane	ND<20
Chloroethane	ND<20
2-Chloroethyl vinyl ether	ND<20
Chloroform	ND<20
1,2-Dichlorobenzene	ND<20
1,3-Dichlorobenzene	ND<20
1,4-Dichlorobenzene	ND<20
1,1-Dichloroethylene	ND<20
trans-1,2-Dichloroethylene	ND<20
1,2-Dichloropropane	ND<20
trans-1,3-Dichloropropene	ND<20
cis-1,3-Dichloropropene	ND<20
Methylene chloride	ND<20
Chloromethane	ND<20
Bromomethane	ND<20
Bromoform	ND<20
Bromodichloromethane	ND<20
Trichlorofluoromethane	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co.

EPA METHOD 601

289-23-967C

Dichlorodifluoromethane	ND<20
Dibromochloromethane	ND<20
Tetrachloroethylene	ND<20
Trichloroethylene	ND<20
Vinyl chloride	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co. 272 Pepe's Farm Rd. , Milford, Ct. 06460

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REPORT ON LABORATORY EXAMINATIONS

To Client: Pratt & Whitney
East Hartford, CT 06108

Date: June 27, 1986

SAMPLE DATA:

Collected By: Pratt & Whitney

Samples from Incinerator at Concentrated Waste Treatment Plant, Pratt & Whitney, East Hartford

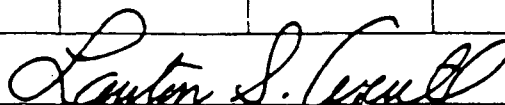
SAMPLE NO.	DESCRIPTION OF SAMPLE
289-23-970	Sample #16, West, Incl. Sec. Inlet Boiler, 6-16-86.
289-23-971	Sample #17, East, 2' up ELPC Inlet Boiler, 6-16-86.
289-23-972	Sample #18, West at cooler ELPC Inlet Boiler, 6-16-86.
289-23-970	Composite of Sample Nos. 289-23-970, 289-23-971 and 289-23-972 by weight.
Comp.	
289-23-970	100 grams of Sample No. 289-23-970 Comp. mixed with distilled water and 18 ml. of 0.5N acetic acid to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.
Comp. E	
289-23-970	100 grams of Sample No. 289-23-970 Comp. mixed with distilled water to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.
Comp. DW	

LABORATORY FINDINGS:

(milligrams per liter, mg./l, except as noted)

ANALYSIS FOR	SAMPLE NO.				
	289-23-970 Comp.		289-23-970 Comp. E		289-23-970 Comp. DW
pH of 10% Slurry	8.0	Tests are mg/l in Filtrate		Tests are mg/l in Filtrate	
		Arsenic	less than 0.01	Chromium, Hexavalent	1.58
		Barium	less than 0.2	Cyanide, Total	0.000
		Cadmium	0.08	pH	8.2
		Chromium, Total	0.51		
		Lead	0.00		
		Mercury	less than 0.002		
		Selenium	less than 0.01		
		Silver	0.024		
		pH	5.0		

cc: Pratt & Whitney
Att: Kevin Vidmar



The Averill Environmental Laboratory, Inc.

EPA METHOD 601

289-23-970C

Carbon tetrachloride	ND<20
Chlorobenzene	ND<20
1,2-Dichloroethane	ND<20
1,1,1-Trichloroethane	ND<20
1,1-Dichloroethane	ND<20
1,1,2-Trichloroethane	ND<20
1,1,2,2-Tetrachloroethane	ND<20
Chloroethane	ND<20
2-Chloroethyl vinyl ether	ND<20
Chloroform	ND<20
1,2-Dichlorobenzene	ND<20
1,3-Dichlorobenzene	ND<20
1,4-Dichlorobenzene	ND<20
1,1-Dichloroethylene	ND<20
trans-1,2-Dichloroethylene	ND<20
1,2-Dichloropropane	ND<20
trans-1,3-Dichloropropene	ND<20
cis-1,3-Dichloropropene	ND<20
Methylene chloride	ND<20
Chloromethane	ND<20
Bromomethane	ND<20
Bromoform	ND<20
Bromodichloromethane	ND<20
Trichlorofluoromethane	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co.

EPA METHOD 601

289-23-970C

Dichlorodifluoromethane	ND<20
Dibromochloromethane	ND<20
Tetrachloroethylene	ND<20
Trichloroethylene	ND<20
Vinyl chloride	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co. 272 Pepe's Farm Rd. , Milford, Ct. 06460

AVERILL P.O. Box 474, Riverdale Farms Route 10N, Avon, CT 06001 (203) 677-6283 ENVIRONMENTAL LABORATORY INC

Lawton S. Averill, Co-Director

Paul C. Clark, Organic Supervisor

Eric W. Snyder, Inorganic Supervisor

Catherine M. Pintavalle, Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Pratt & Whitney
East Hartford, CT 06108

Date: June 27, 1986

SAMPLE DATA:

Collected By: Pratt & Whitney

Samples from Incinerator at Concentrated Waste Treatment Plant, Pratt & Whitney, East Hartford

SAMPLE NO.	DESCRIPTION OF SAMPLE
289-23-973	Sample #19, East 2' Down Duct into Boiler, 6-16-86.
289-23-974	Sample #20, West 2' Up Duct into Boiler, 6-16-86.
289-23-973	Composite of Sample Nos. 289-23-973 and 289-23-974 by weight.
Comp.	
289-23-973	100 grams of Sample No. 289-23-973 Comp. mixed with distilled water and 14 ml. of 0.5N acetic acid to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.
Comp.E	
289-23-973	100 grams of Sample No. 289-23-973 Comp. mixed with distilled water to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.
Comp.DW	

LABORATORY FINDINGS:

(milligrams per liter, mg./l, except as noted)

ANALYSIS FOR	SAMPLE NO.			
	289-23-973 Comp.		289-23-973 Comp. E	289-23-973 Comp. DW
pH of 10% Slurry	6.9	Tests are mg/l in Filtrate		Tests are mg/l in Filtrate
		Arsenic	less than 0.01	Chromium, Hexavalent
		Barium	less than 0.2	Cyanide, Total
		Cadmium	0.032	pH
		Chromium, Total	0.44	
		Lead	0.03	
		Mercury	less than 0.002	
		Selenium	less than 0.01	
		Silver	0.023	
		pH	5.2	
				0.56
				0.000
				6.4

cc: Pratt & Whitney
Att: Kevin Vidmar

Lawton S. Averill

The Averill Environmental Laboratory, Inc.

EPA METHOD 601

289-23-973C

Carbon tetrachloride	ND<20
Chlorobenzene	ND<20
1,2-Dichloroethane	ND<20
1,1,1-Trichloroethane	ND<20
1,1-Dichloroethane	ND<20
1,1,2-Trichloroethane	ND<20
1,1,2,2-Tetrachloroethane	ND<20
Chloroethane	ND<20
2-Chloroethyl vinyl ether	ND<20
Chloroform	ND<20
1,2-Dichlorobenzene	ND<20
1,3-Dichlorobenzene	ND<20
1,4-Dichlorobenzene	ND<20
1,1-Dichloroethylene	ND<20
trans-1,2-Dichloroethylene	ND<20
1,2-Dichloropropane	ND<20
trans-1,3-Dichloropropene	ND<20
cis-1,3-Dichloropropene	ND<20
Methylene chloride	ND<20
Chloromethane	ND<20
Bromomethane	ND<20
Bromoform	ND<20
Bromodichloromethane	ND<20
Trichlorofluoromethane	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co.

EPA METHOD 601

289-23-973C

Dichlorodifluoromethane	ND<20
Dibromochloromethane	ND<20
Tetrachloroethylene	ND<20
Trichloroethylene	ND<20
Vinyl chloride	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co. 272 Pepe's Farm Rd. , Milford, Ct. 06460

AVERILL

P.O. Box 474, Riverdale Farms
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ENVIRONMENTAL LABORATORY INC

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Catherine M. Pintavalle, Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Pratt & Whitney
East Hartford, CT 06108

Date: June 27, 1986

SAMPLE DATA:

Collected By: Pratt & Whitney

Samples from Incinerator at Concentrated Waste Treatment Plant, Pratt & Whitney, East Hartford

SAMPLE NO.	DESCRIPTION OF SAMPLE
289-23-975	Sample #21, So. Side Boiler Inlet, 6-16-86.
289-23-976	Sample #22, No. Side Boiler Inlet, 6-16-86.
289-23-977	Sample #23, Bottom Boiler Inlet, 6-16-86.
289-23-975	Composite of Sample Nos. 289-23-975, 289-23-976 and 289-23-977 by weight.
Comp.	
289-23-975	100 grams of Sample No. 289-23-975 Comp. mixed with distilled water and 0
Comp. E	ml. of 0.5N acetic acid to a total volume of 1000 ml., mixed for 24 hours,
	settled and filtered through 0.45 micron filter. Filtrate was tested.
289-23-975	100 grams of Sample No. 289-23-975 Comp. mixed with distilled water to a
Comp. DW	total volume of 2000 ml., mixed for 24 hours, settled and filtered through
	0.45 micron filter. Filtrate was tested.

LABORATORY FINDINGS:

(milligrams per liter, mg./l, except as noted)

ANALYSIS FOR	SAMPLE NO.				
	289-23-975 Comp.		289-23-975 Comp. E		289-23-975 Comp. DW
pH of 10% Slurry	2.3	Tests are		Tests are	
		mg/l in		mg/l in	
		Filtrate		Filtrate	
		Arsenic	less than	Chromium,	
			0.01	Hexavalent	0.00
		Barium	less than	Cyanide,	
			0.2	Total	0.000
		Cadmium	0.59	pH	2.9
		Chromium,			
		Total	0.17		
		Lead	0.17		
		Mercury	less than		
			0.002		
		Selenium	less than		
			0.01		
		Silver	0.12		
		pH	2.9		

cc: Pratt & Whitney
Att: Kevin Vidmar

Lawton S. Averill
The Averill Environmental Laboratory, Inc.

EPA METHOD 601

289-23-975C

Carbon tetrachloride	ND<20
Chlorobenzene	ND<20
1,2-Dichloroethane	ND<20
1,1,1-Trichloroethane	ND<20
1,1-Dichloroethane	ND<20
1,1,2-Trichloroethane	ND<20
1,1,2,2-Tetrachloroethane	ND<20
Chloroethane	ND<20
2-Chloroethyl vinyl ether	ND<20
Chloroform	ND<20
1,2-Dichlorobenzene	ND<20
1,3-Dichlorobenzene	ND<20
1,4-Dichlorobenzene	ND<20
1,1-Dichloroethylene	ND<20
trans-1,2-Dichloroethylene	ND<20
1,2-Dichloropropane	ND<20
trans-1,3-Dichloropropene	ND<20
cis-1,3-Dichloropropene	ND<20
Methylene chloride	ND<20
Chloromethane	ND<20
Bromomethane	ND<20
Bromoform	ND<20
Bromodichloromethane	ND<20
Trichlorofluoromethane	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co.

EPA METHOD 601

289-23-975C

Dichlorodifluoromethane	ND<20
Dibromochloromethane	ND<20
Tetrachloroethylene	ND<20
Trichloroethylene	ND<20
Vinyl chloride	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co. 272 Pepe's Farm Rd. , Milford, Ct. 06460

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Catherine M. Pintavalle, Co-Director

REPORT ON LABORATORY EXAMINATIONS

To Client: Pratt & Whitney
East Hartford, CT 06108

Date: June 27, 1986

SAMPLE DATA:

Collected By: Pratt & Whitney

Samples from Incinerator at Concentrated Waste Treatment Plant, Pratt & Whitney, East Hartford

SAMPLE NO.	DESCRIPTION OF SAMPLE
289-23-978	Sample #24, So. Side Boiler Disch., 6-16-86.
289-23-979	Sample #25, No. Side Boiler Disch., 6-16-86.
289-23-980	Sample #26, Bottom Boiler Disch., 6-16-86.
289-23-978	Composite of Sample Nos. 289-23-978, 289-23-979 and 289-23-980 by weight.
Comp.	
289-23-978	100 grams of Sample No. 289-23-978 Comp. mixed with distilled water and 61.6 ml. of 0.5N acetic acid to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.
Comp.E	
289-23-978	100 grams of Sample No. 289-23-978 Comp. mixed with distilled water to a total volume of 2000 ml., mixed for 24 hours, settled and filtered through 0.45 micron filter. Filtrate was tested.
Comp.DW	

LABORATORY FINDINGS:

(milligrams per liter, mg/l, except as noted)

ANALYSIS FOR	SAMPLE NO.				
	289-23-978 Comp.		289-23-978 Comp.E		289-23-978 Comp.DW
pH of 10% Slurry	6.0	Tests are mg/l in Filtrate		Tests are mg/l in Filtrate	
		Arsenic	less than 0.01	Chromium, Hexavalent	0.00
		Barium	less than 0.2	Cyanide, Total	0.000
		Cadmium	0.15	pH	6.3
		Chromium, Total	0.01		
		Lead	0.02		
		Mercury	less than 0.002		
		Selenium	less than 0.01		
		Silver	0.018		
		pH	4.8		

cc: Pratt & Whitney
Att: Kevin Vidmar

Lawton S. Averill
The Averill Environmental Laboratory, Inc.

EPA METHOD 601

289-23-978C

Carbon tetrachloride	ND<20
Chlorobenzene	ND<20
1,2-Dichloroethane	ND<20
1,1,1-Trichloroethane	ND<20
1,1-Dichloroethane	ND<20
1,1,2-Trichloroethane	ND<20
1,1,2,2-Tetrachloroethane	ND<20
Chloroethane	ND<20
2-Chloroethyl vinyl ether	ND<20
Chloroform	ND<20
1,2-Dichlorobenzene	ND<20
1,3-Dichlorobenzene	ND<20
1,4-Dichlorobenzene	ND<20
1,1-Dichloroethylene	ND<20
trans-1,2-Dichloroethylene	ND<20
1,2-Dichloropropane	ND<20
trans-1,3-Dichloropropene	ND<20
cis-1,3-Dichloropropene	ND<20
Methylene chloride	ND<20
Chloromethane	ND<20
Bromomethane	ND<20
Bromoform	ND<20
Bromodichloromethane	ND<20
Trichlorofluoromethane	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co.

EPA METHOD 601

289-23-978C

Dichlorodifluoromethane	ND<20
Dibromochloromethane	ND<20
Tetrachloroethylene	ND<20
Trichloroethylene	ND<20
Vinyl chloride	ND<20

Results are in ug/kg (ppb)

Baron Consulting Co. 272 Pepe's Farm Rd. , Milford, Ct. 06460

APPENDIX E

CLOSURE PERFORMANCE STANDARDS

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

TABLE 1

TARGET CLEANUP LEVELS WASTE FEED LINE RINSATE SAMPLING

<u>CONSTITUENT</u>	<u>CONCENTRATION (mg/l)</u>
Arsenic ¹	0.05
Barium ¹	1.0
Cadmium ¹	0.01
Chromium ¹	0.05
Copper ²	1.0
Lead ¹	0.05
Mercury ¹	0.002
Selenium ¹	0.01
Silver ¹	0.05
Cyanide ³	0.2
Carbon Tetrachloride ¹	0.005
1,1-Dichloroethylene ¹	0.007
Methylene Chloride ⁴	0.025
Tetrachloroethylene ⁴	0.02
1,1,1-Trichloroethane ¹	0.20
Trichloroethylene ¹	0.005

1. EPA Primary Drinking Water Standard (MCL)
2. EPA Secondary Drinking Water Standard (SMCL)
3. Recommended Contaminant Level (RMCL)
4. Connecticut Department of Health Services - Action Level

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

TABLE 2

HEALTH BASED RISK LEVELS CONCRETE CHIP SAMPLING

<u>CONSTITUENT</u>	<u>CONCENTRATION</u> (mg/kg)
Arsenic	0.02
Barium	900
Cadmium	*
Chromium vi	90
Copper	*
Lead	*
Mercury	*
Nickel	300
Selenium	*
Silver	50
Cyanide	300
Carbon Tetrachloride	2.7
1,1-Dichloroethylene	5.8
Methylene Chloride	47
Tetrachloroethylene	69
1,1,1-Trichloroethane	2000
Trichloroethylene	32

Risk levels obtained from RCRA Facility Investigation (RFI)
Guidance Document (EPA Publication SW-87-001)

* No risk levels identified

RCRA Part B Permit Application
United Technologies
Pratt & Whitney
CTD 990672081

Page 145 of 149
September 5, 1991

APPENDIX H-2
INTERIM REPORT
CLOSURE OF BURN-ZOL INCINERATOR

INTERIM REPORT
CLOSURE OF BURN-ZOL INCINERATOR

PREPARED FOR:

UNITED TECHNOLOGIES CORPORATION
PRATT & WHITNEY
400 MAIN STREET
EAST HARTFORD, CT 06108
EPA ID NO. CTD 990672081

PREPARED BY:

SUGATO MITRA

SCI-TECH, INC.
360 MAIN STREET
MIDDLETOWN, CT 06457

SCI-TECH PROJECT NUMBER 90021

JUNE 1990

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J	Copies of Receipts
K	Copies of Disposal Certificates
L	Sampling Logs
M	Raw Analytical Data
N	Validation Report

1.0 INTRODUCTION

United Technologies-Pratt & Whitney (P&W) owns and operates the Concentrated Waste Treatment Plant (CWTP), a hazardous waste treatment and storage facility, located at the P&W East Hartford plant. A Burn-Zol hazardous waste incinerator, which was part of the CWTP, is being closed per the closure plan, approved on September 11, 1989 by both the Connecticut Department of Environmental Protection (DEP) and the United States Environmental Protection Agency (EPA), Region I. International Technology Corporation (IT) of Monroeville, PA., was contracted to carry out the closure activities. Sampling, as required by the approved closure plan, was performed by either IT or P&W personnel. All samples collected during closure were analyzed at Connecticut certified Averill Environmental Laboratory, Inc., (Averill) of Plainville, CT. The analytical data were reviewed and validated by Fred C. Hart Associates, Inc., (Hart) of Albany, NY.

The analytical data for samples collected at the end of initial closure activities indicate that two of the waste feed line rinsates have not fully met the closure criteria. Because of this, P&W has requested an extension of the closure period from both DEP and EPA, Region I to allow for additional closure activities. This report describes the closure activities performed to date. This report also contains the specific submittals, which constitute a closure certification. These are discussed in sub-Section 5.4.

2.0 PROJECT DESCRIPTION

Closure of the incinerator is considered to be a partial closure of the overall P&W East Hartford hazardous waste facility. This section identifies the equipment and the ancillary facilities subject to closure and summarizes the closure plan.

2.1 System Description

The approved closure plan authorizes P&W to close the following equipment and facilities in the CWTP.

1. Combustion Chamber
2. Exhaust Stacks (2)
3. Waste Heat Boiler
4. Air Pollution Control Equipment
5. Interconnecting breaching and piping
6. Cyanide feed line
7. Blended oil feed lines(2)
8. Concrete Pad for combustion chamber
9. Concrete Pit of air pollution control equipment
10. Ceiling above the equipment to be closed

The combustion chamber and the exhaust stacks were located outdoors. The remainder of the incinerator train was located indoors. The cyanide and the blended oil waste feed lines are located underground. A site plan, equipment layouts and a flow diagram of the incinerator train and the waste feeds lines are included in Appendix A. Photographs of the incinerator train are included in Appendix B.

2.2 Closure Plan Summary

The final closure plan dated July 28, 1989 as amended on August 17, 1989 was approved on September 11, 1989. The following are the main features of the approved closure plan.

2.2.1 Disposal and Decontamination

- a. Any ash from the incinerator, residue from the waste heat boiler, and packing from the scrubber will be removed, containerized, and treated as hazardous waste.
- b. Waste feed lines will be decontaminated by flushing until they meet the closure criteria and then they will be abandoned in place. Any rinsate generated from flushing of the lines will be treated as hazardous waste.
- c. The entire incinerator train including the air pollution control equipment will be dismantled, cut to shippable sizes and disposed of at a RCRA permitted secure landfill.
- d. The concrete slab will be shotblasted or scarified. Any concrete residue will be treated as hazardous waste.
- e. The concrete pit for the air pollution control equipment will be hydroblasted. Any rinsate generated will be treated as hazardous waste.
- f. The ceiling in the building will be washed by applying a biodegradable cleaning solution with a hand applicator. Any rinsate generated will be treated as hazardous waste.
- g. All hand tools that may have come in contact with the incinerator train will be decontaminated by washing. Any rinsate generated will be treated as hazardous waste.

2.2.2 Sampling

- a. The final flush from each waste feed line will be sampled.
- b. Chip samples will be taken from the concrete slab and the concrete pit.
- c. Wipe samples will be collected from the ceiling.

2.2.3 Analysis

- a. All samples will be analyzed for presence of the constituents identified in Table 2 of the final closure plan (Appendix C).
- b. Concrete chip samples will be analyzed for EP toxicity.

2.2.4 Closure Criteria

- a. Appendix C constituent levels in the rinsate must be either below the levels shown in Table 1 of Appendix D or equal to or below the levels in the influent water sample collected prior to flushing.
- b. The concrete chip samples must show Appendix C constituent levels either equal to, or below the background levels, or below the levels shown in Table 2 of Appendix D and below the EP Toxicity levels shown in Table 1 of 40 CFR 261.24 in effect on the date of closure approval (September 11, 1989).
- c. Appendix C constituent levels in the ceiling wipe samples must be equal to or below the background levels.

3.0 CLOSURE ACTIVITIES

The activities associated with the closure of the Burn-Zol hazardous waste incinerator consist of dismantling, decontamination, disposal and sampling. The logs of daily activities of the IT crew are included in Appendix E. Photographs showing progress of the closure activities are included in Appendix F.

During the closure activities the health and safety plan included in Appendix G was followed. A safety meeting was conducted prior to start of work each day. The lists of attendees and topics covered are included in Appendix H.

3.1 Dismantling

All major components of the incinerator train and interconnecting breaching and piping were dismantled. Refractory from all refractory lined items was removed by hand or with an electric chipping hammer. The shells of all components and the interconnecting breaching and piping were cut into shippable pieces. The concrete pad with footing was excavated and broken up. Debris from dismantling and small equipment pieces were initially staged on plastic sheeting with plastic covers and then placed in covered roll-off containers for disposal. The large equipment pieces were similarly staged and then put on flat bed trailer for disposal. The following is a list of the components dismantled:

1. Combustion Chamber
2. Exhaust Stacks
3. Waste Heat Boiler
4. Air Pollution Control Equipment
5. Interconnecting Breaching and Piping
6. Concrete Pad for Combustion Chamber

3.2 Decontamination

The items decontaminated and the decontamination procedures are noted below.

1. Blended Oil Feed Line (WFL1):

The line was flushed in sequence tap water, Citrikleen solution (30%) (a biodegradable detergent) and tap water. As the line was not clean, it was then flushed with steam for 7.5 hours followed by Citrikleen solution, and tap water in sequence. The line was capped at both ends.

2. Blended Oil Feed Line (WFL2):

The line was found plugged. It was flushed with steam for 6 hours. It was then flushed in sequence with tap water, Citrikleen solution and tap water similar to WFL1. It was then flushed again with steam for six hours and Citrikleen solution and tap water in sequence. The line was capped at both ends.

3. Cyanide Feed Line (WFL3):

The cyanide line decontamination was similar to WFL1, except a 25% sodium hydroxide solution was used instead of Citrikleen solution during the initial cleaning. The line was capped at both ends.

4. Concrete Pit:

The concrete pit was decontaminated by steam cleaning.

5. Ceiling:

The ceiling was hand sprayed with Citrikleen solution and wiped with disposable lint-free cloth.

6. Tools:

The tools used in closure were steam cleaned.

Rinsates from all decontamination operation were collected in 55 gallon drums.

3.3 Disposal

The types of waste materials and disposal methods from this closure are noted below. For disposal purposes, the waste materials were treated as hazardous waste.

1. Debris and Small Equipment Pieces:

These were put in four roll-off containers which were transported off-site by licensed hazardous waste transporters to the RCRA permitted secure landfill operated by Chemical Waste Management, Inc., at Emelle, Alabama under the following hazardous waste manifest numbers:

CWMA	476051
CWMA	476052
CWMA	476055
CWMA	476056

The first two containers were shipped on December 1, 1989 and the last two on December 8, 1989. Copies of manifests, receipts and disposal certificates are included in Appendices I, J, and K, respectively.

2. Large Equipment Pieces:

These were put on a flat bed trailer and shipped to the same disposal facility as above by a licensed hazardous waste transporter under hazardous waste manifest number CWMA 476053 on December 4, 1989. Copies of manifest, receipt and disposal certificate are included in Appendices I, J, and K, respectively.

3. Rinsates:

The collected rinsates were transferred from 55 gallon drums to bulk tanks containing similar and compatible liquid hazardous waste streams. These bulk waste streams are routinely sent off site for disposal and/or treatment at properly licensed disposal and/or treatment facilities.

3.4 Sampling

The following samples were collected per the approved closure plan.

1. Final rinsate from WFL1
2. Final rinsate from WFL2
3. Final rinsate from WFL3
4. Influent tap water
5. Concrete chip samples from the pit
6. Wipe samples from the decontaminated ceiling
7. Wipe samples from background ceiling area

The sampling methodology and the analytical results are discussed in more detail in Section 4.

4.0 SAMPLING AND ANALYSIS

During and at the end of closure activities various samples were collected to assess the completeness of these activities. The samples were collected by either Mr. Jacques Hill of IT or Mr. Scott Singer of P&W. The collected samples were sent under full chain-of-custody to Averill for analysis. Sampling logs and raw analytical data are included in Appendices L and M respectively. The analytical results were reviewed and validated by Hart. The validation report is included in Appendix N. Only the final sampling program and the validated data from the analyses of the final samples are presented in this section.

4.1 Waste Feed Lines

The second and final round of waste feed line sampling was performed on December 7, 1989. IT coordinated sampling activities and the first sample collected was an influent tap water sample from the wax building. The water was activated at 1150 hours and allowed to flow through a new length of garden hose for 5 minutes prior to sample collection. The sample was collected directly from the end of the garden hose.

Waste feed line flushing operations were initiated at 1155 hours. The flushing procedures were modified by flushing each waste feed line with Citrikleen solution, and tap water in sequence. An average of 25 gallons of rinsate was collected from each line prior to sample collection.

The samples were collected directly into the laboratory bottles from a new length of garden hose on each line. For this round of sample collection, the samples were labelled WFL-1A, WFL-2A, WFL-3A for each respective feed line. In addition, a blind duplicate sample was collected from waste feed line WFL2 and was labelled WFL-4A.

The QA/QC samples included a field blank collected on November 15, 1989 during the initial round of sampling and a trip blank. The field blank was prepared on November 15, 1989 at 1540 hours by pouring deionized water into sample containers. The trip blank was prepared by Averill and accompanied the sample bottles from and to Averill.

Following sample collection, all sample jars were labelled, transferred to an iced cooler and hand delivered under full chain of custody to Averill for analysis.

The validated analytical results are presented in Table 4-1. The results indicate that the levels of Appendix C constituents in rinsate from the cyanide feed line (Sample WFL-3A) were below the target levels. Results from both blended fuel lines (Samples WFL-1A, WFL-2A and WFL-4A) indicate that levels of all inorganic Appendix C constituents were below the target levels.

TABLE 4-1

WASTE FEED LINE SAMPLE ANALYSIS (mg/l)

<u>Parameter</u>	Target	<u>SAMPLE NUMBERS</u>				
	<u>Clean Level</u>	<u>Influent</u>	<u>WFL #1A</u>	<u>WFL #2A</u>	<u>WFL #3A</u>	<u>WFL #4A*</u>
<u>Metals</u>						
Arsenic	0.05	<0.01	<0.01	<0.01	<0.01	<0.01
Barium	1.0	<0.01	0.01	<0.01	0.01	<0.01
Cadmium	0.01	<0.006	<0.006	<0.006	<0.006	<0.006
Chromium	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium VI	--	<0.01	<0.01	<0.1	<0.01	<0.01
Copper	1.0	0.21	0.21	0.1	0.09	0.09
Lead	0.05	<0.1	<0.1	<0.1	<0.01	<0.01
Mercury	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	--	<0.02	<0.02	<0.02	<0.02	<0.02
Selenium	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	0.05	<0.01	<0.01	<0.01	<0.01	<0.01
<u>Cyanide</u>						
Total	0.2	<0.005	<0.005	0.12	<0.005	0.21
<u>Volatile Organics</u>						
Methylene Chloride	0.025	<0.005	0.058	<0.01	<0.005	<0.01
1,1 Dichloroethene	0.007	<0.005	<0.005	<0.01	<0.005	<0.01
1,1,1 Trichloroethane	0.2	<0.005	0.012	0.022	<0.005	0.016
Carbon Tetrachloride	0.005	<0.005	<0.005	<0.01	<0.005	<0.01
Trichloroethene	0.005	<0.005	0.122	<0.01	<0.005	<0.01
Tetrachloroethylene	0.02	<0.005	0.048	3.4	<0.005	3.7

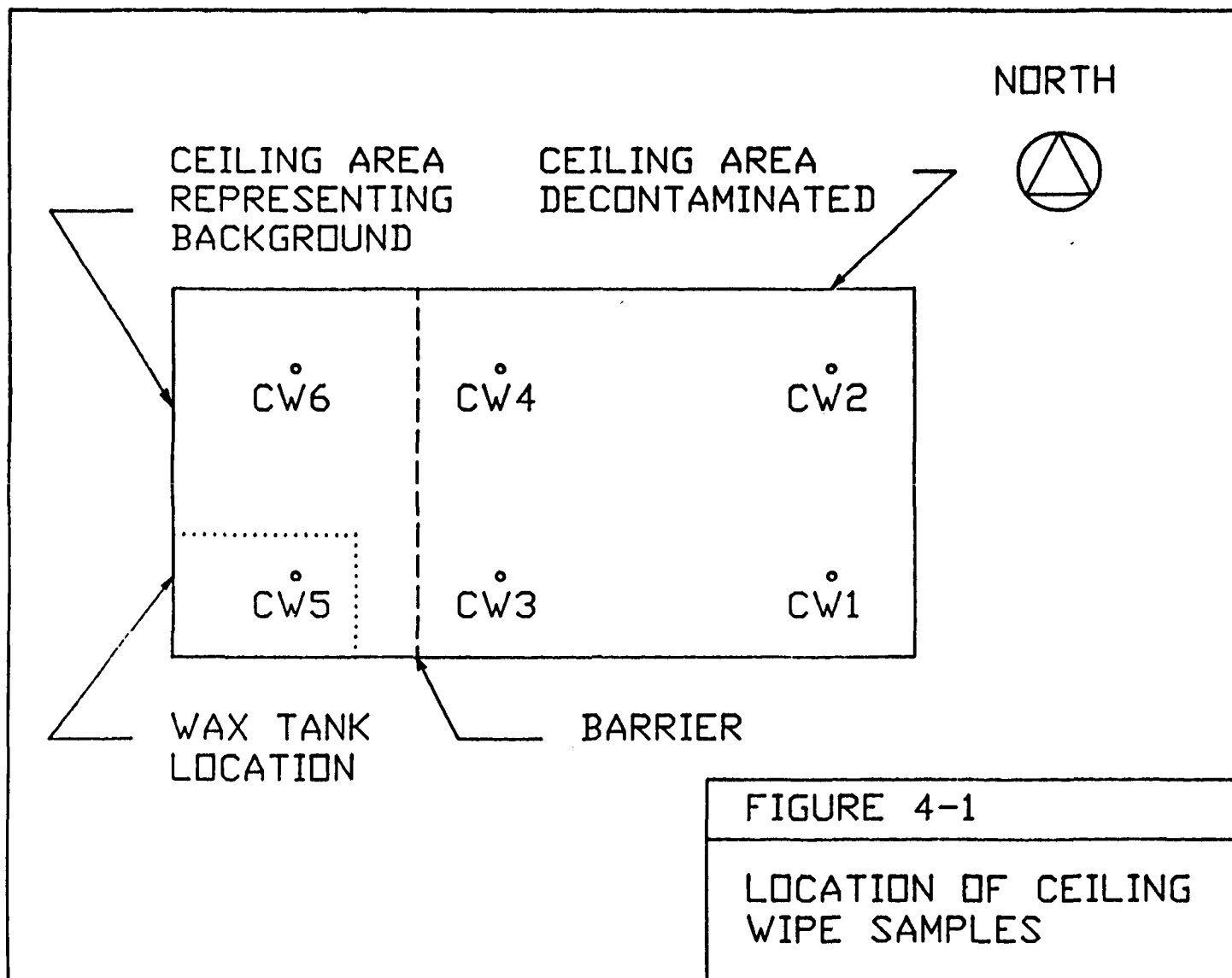
* duplicate of WFL #2A

4.2 Ceiling

A total of six wipe samples were collected on December 7, 1989. Four of the wipe samples (CW-1, CW-2, CW-3, CW-4) were collected from an area of the ceiling which underwent decontamination. The remaining two samples (CW-5, CW-6) were collected from outside the decontamination zone to represent background conditions. Figure 4.1 shows the layout of the sample locations.

Sampling methodology followed the procedures per the approved closure plan. Vinyl acetate templates were used at each location to outline the sample area. The template dimensions measured 5 X 20 cm thereby totalling 100cm². Templates were affixed to the ceiling using small magnets. Sample wipes were transferred directly into the sample jars following sample collection, and the sampling team changed gloves at each sample location to ensure sample integrity.

At a given sample location, a total of three templates were positioned side by side following the contour of the corrugated ceiling. The first template was sampled for Appendix C organic constituents, the second for cyanide and the third for Appendix C metals. Methanol, dilute sodium hydroxide solution, and dilute nitric acid solution were the respective extraction solvents. During VOCs sampling it was observed that the methanol was stripping the paint off the ceiling. No such stripping was observed during cyanide or metals sampling.



Specific sampling procedures for each set of parameters consisted of performing three wipes. The first two wipes were performed wet by moistening the wipe with the appropriate extraction solvent. The third wipe was performed dry to absorb any residual extraction solvent from the sample area.

QA/QC sampling consisted of one field blank collected at location CW-1. This sample was prepared in the same manner as the other samples except no wiping of the ceiling was performed.

Following sample collection, all sample jars were labelled, transferred to an ice cooler and hand delivered under full chain of custody to Averill for analysis.

The validated analytical results are presented in Table 4-2. The results indicate that the Appendix C constituent levels shown by samples CW-1, CW-2, CW-3 and CW-4 match the corresponding constituent levels shown by background samples CW-5 and CW-6. The only exception was the 1,1 dichloroethene level in sample CW-2. As there were not any incinerator train components or waste feed lines near the location where sample CW-2 was collected, this level can not be attributed to the equipment undergoing closure. Also, this reported level is inconsistent with non-detectable levels reported for other locations; therefore, the value is considered an analytical anomaly and was rejected.

TABLE 4-2

CEILING WIPE SAMPLE ANALYSIS (micro g/100cm²)

Parameter	SAMPLE NUMBERS					
	CW-1	CW-2	CW-3	CW-4	CW-5*	CW-6*
<u>Metals</u>						
Arsenic	<47.5	<47.5	<47.5	<47.5	<47.5	<47.5
Barium	>14000	>14000	>14000	>14000	>14000	>14000
Cadmium	<45	<45	<45	<45	<45	<45
Chromium	<25	<25	<25	<25	<25	<25
Chromium VI	--	--	--	--	--	--
Copper	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Lead	<130	<130	<130	<130	<130	<130
Mercury	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Silver	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
<u>Cyanide</u>						
Total	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
<u>Volatile Organics</u>						
Methylene Chloride	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9
1,1 Dichloroethene	<0.05	0.14	<0.05	<0.05	<0.05	<0.05
1,1,1 Trichloroethane	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3
Carbon Tetrachloride	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Trichloroethene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	<1.05	<1.05	<1.05	<1.05	<1.05	<1.05

* background

4.3 Concrete

A total of six concrete chip samples were collected on December 7, 1989. Five of the samples were collected to assess the completeness of pit decontamination. A sixth sample was collected as a background sample. Figure 4.2 shows the sample locations.

Samples CS-1, CS-2, CS-3, CS-4, and CS-5 were collected from each wall of the pit and the floor. Wall samples were collected approximately 2.5 feet above the pit floor in the center of the wall. The floor sample was collected from the center of the floor.

The background sample CS-6 was collected in the same pit as the decontamination samples. This sample was collected immediately below the top of the pit wall near the southwest corner of the pit.

All concrete chip samples were collected by IT representative, Mr. Jacques Hill using a cleaned hand chisel and a hammer. Dislodged chips were allowed to fall on a fresh piece of polyethylene sheeting. Using a pair of new latex gloves, the sampler then collected the chips and transferred them directly into the sample jars.

Following sample collection, all sample jars were labelled, transferred to an iced cooler and hand delivered under full chain of custody to Averill for analysis.

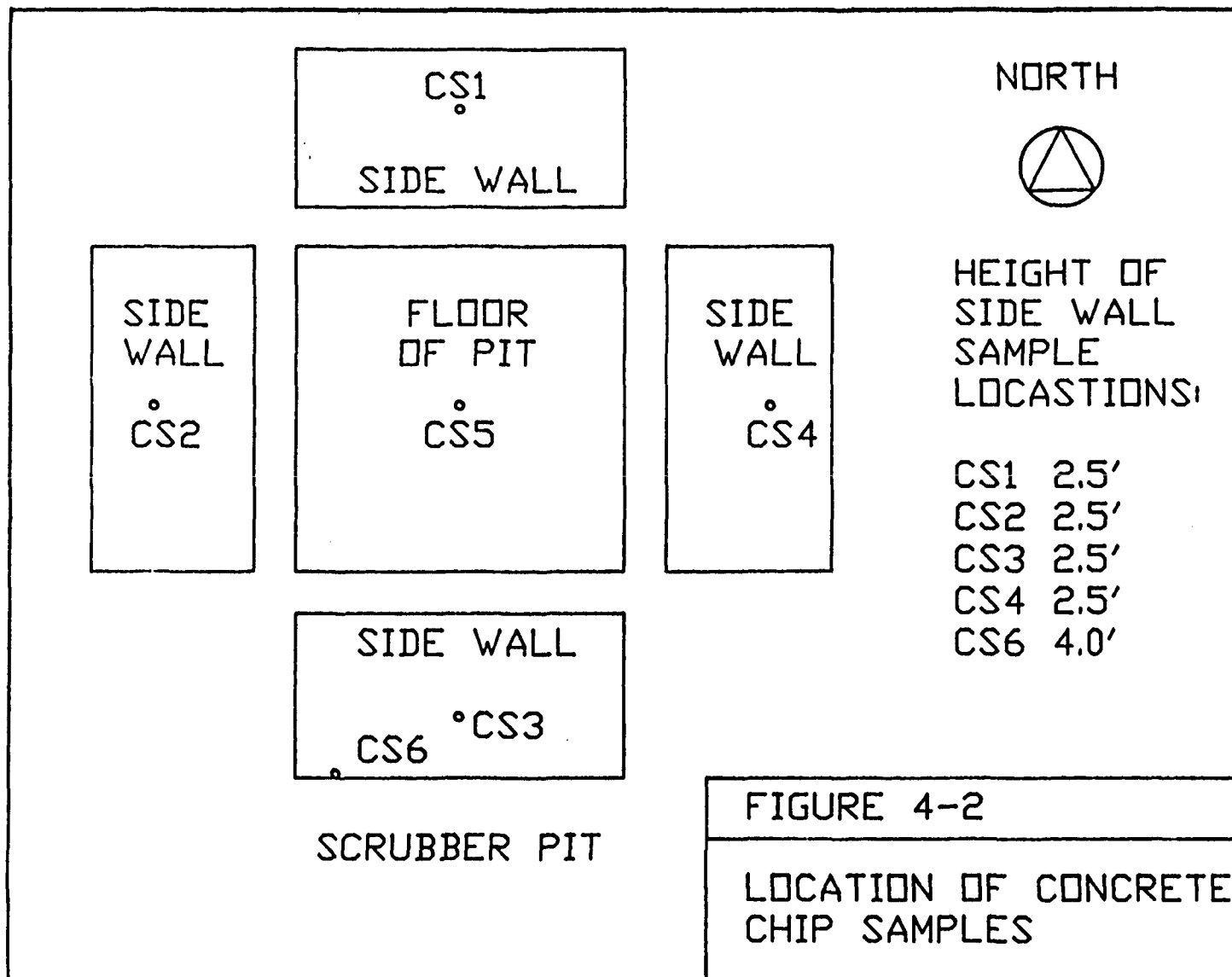


FIGURE 4-2

LOCATION OF CONCRETE CHIP SAMPLES

The validated analytical results for the Appendix C constituents are presented in Table 4-3 and the validated analytical results for EP Toxicity analysis are presented in Table 4-4. Mass analysis results for sample CS-5 show elevated levels of chromium and nickel which can be attributed to the sampling tool (steel chisel), which contains these metals. In general, the Appendix C constituent levels are found to match the background levels and the EP Toxicity results are below levels presented in Table 1 of 40 CFR 261.24.

TABLE 4-3
CONCRETE CHIP SAMPLE ANALYSIS (ppm)

<u>Parameter</u>	<u>Target Clean Level</u>	<u>SAMPLE NUMBERS</u>					
		<u>CS-1</u>	<u>CS-2</u>	<u>CS-3</u>	<u>CS-4</u>	<u>CS-5</u>	<u>CS-6*</u>
<u>Metals</u>							
Arsenic	0.02	5.5	6.7	7.5	6.0	7.3	8.6
Barium	900	47	23	40	5.0	45	19
Cadmium	-	4.7	<1.3	<1.5	<1.3	<1.5	<1.5
Chromium	-	15	9.3	49	3.4	640	3.4
Chromium VI	90	<0.059	0.065	0.23	0.13	0.033	0.12
Copper	-	9.9	13	30	9.7	74	10
Lead	-	<2.1	<2.1	3.0	<2.1	9.8	4.4
Mercury	-	0.043	0.042	0.049	0.042	0.049	0.049
Nickel	300	19	8.9	54	<4.2	400	<4.9
Selenium	-	< .47	<0.45	<0.47	<0.51	<0.41	<0.49
Silver	50	<2.2	<2.2	<2.0	<2.3	3.4	<2.4
<u>Cyanide</u>							
Total	300	<0.48	<0.49	<0.48	<0.51	<0.49	<0.5
<u>Volatile Organics</u>							
Methylene Chloride	47	0.005	0.007	0.002	0.005	0.009	0.005
1,1 Dichloroethene	5.8	0.002	0.005	0.006	0.007	<0.0025	<0.0025
1,1,1 Trichloroethane	2000	0.022	0.096	0.13	0.031	<0.0025	0.018
Carbon Tetrachloride	2.7	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Trichloroethene	32	0.002	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Tetrachloroethylene	69	0.28	0.46	0.53	0.31	0.017	0.3

* background

TABLE 4-4

CONCRETE CHIP SAMPLE EP TOXICITY ANALYSIS (ppm)

<u>Parameter</u>	EP	<u>SAMPLE NUMBERS</u>					
	<u>Toxicity Levels</u>	<u>CS-1</u>	<u>CS-2</u>	<u>CS-3</u>	<u>CS-4</u>	<u>CS-5</u>	<u>CS-6*</u>
<u>Metals</u>							
Arsenic	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Barium	100	0.30	0.16	0.26	0.22	0.31	0.21
Cadmium	1	<0.03	<0.03	0.04	<0.03	<0.03	<0.03
Chromium	5	0.06	0.06	0.07	0.06	<0.05	<0.05
Chromium VI	--	--	--	--	--	--	--
Copper	--	--	--	--	--	--	--
Lead	5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	0.2	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	--	--	--	--	--	--	--
Selenium	1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

* background

5.0 DISCUSSION

5.1 Closure Procedures

Except as noted in sub-Section 5.2 closure activities conformed to the approved closure plan. Per the closure plan, all incinerator train components were dismantled and disposed of at a RCRA permitted secure landfill. These system components are considered properly closed.

The concrete pit and the ceiling were decontaminated according to the approved closure plan. The concrete chip samples from the pit exhibited Appendix C constituent levels similar to the background levels and did not exhibit the hazardous waste characteristic for EP Toxicity. The wipe samples from the ceiling exhibited Appendix C constituent levels similar to the background samples. Therefore, these areas can be considered properly closed as they meet the closure criteria.

5.2 Deviations

Due to unforeseen circumstances, certain procedures that were not included in the approved closure plan were implemented to assure proper closure. These are discussed below.

- (a) The concrete pad for the combustion chamber was not large enough to allow for adequate background sampling. Therefore, the entire pad and the footing were excavated and disposed of along with other debris at the RCRA permitted secure landfill. The concrete pad is considered properly closed.
- (b) A blended oil feed line (WFL2) was found plugged. It was flushed with steam to clear the blockage. The rinsate generated was treated as hazardous waste.

- (c) It was stated in the approved closure plan that if waste feed line WFL3 was not decontaminated after the initial cleaning, the same steps will be repeated. Initial rinsate sampling resulted in no detectable cyanide; however, several organic constituents were detected above the target clean levels. As a result, the decontamination procedure was modified by substituting a Citrikleen solution for the sodium hydroxide solution during the second round of line flushing. The validated analytical results from the final round of sampling indicated that all Appendix C constituent levels were below the target level. The cyanide feed line is considered closed properly.
- (d) Decontamination of all three waste feed lines was deemed incomplete following the initial round of line flushing. Decontamination procedure during line flushing were modified by using steam and Citrikleen solution since organic constituents were targeted for removal.

5.3 Incomplete Items

The validated analytical results from the final rinsate analyses (WFL-1A, WFL-2A and WFL-4A) from the two blended oil feed lines indicated that the levels of organic constituents were above the closure criteria. The closure of these two lines is deemed incomplete.

5.4 Specific Submittals

Specific submittals that constitute a complete closure certification for the incinerator train and the waste feed lines are identified and discussed below.

1. As-built Drawings:

Since all the equipment components that were closed have been removed and disposed of off-site and there was no new construction associated with this closure, as-built drawings are deemed unnecessary and are not included. The drawings and the photographs of the facility prior to closure are included in Appendices A and B, respectively.

2. Soil Verification Test Results:

Soil verification tests were not required by the approved closure plan.

3. Appendix IX Test Results:

Appendix IX testing was not required by the approved closure plan

4. Photographic Records of Closure

These are included in Appendix F.

5. Summary of Daily Logs

These are included in Appendix E.

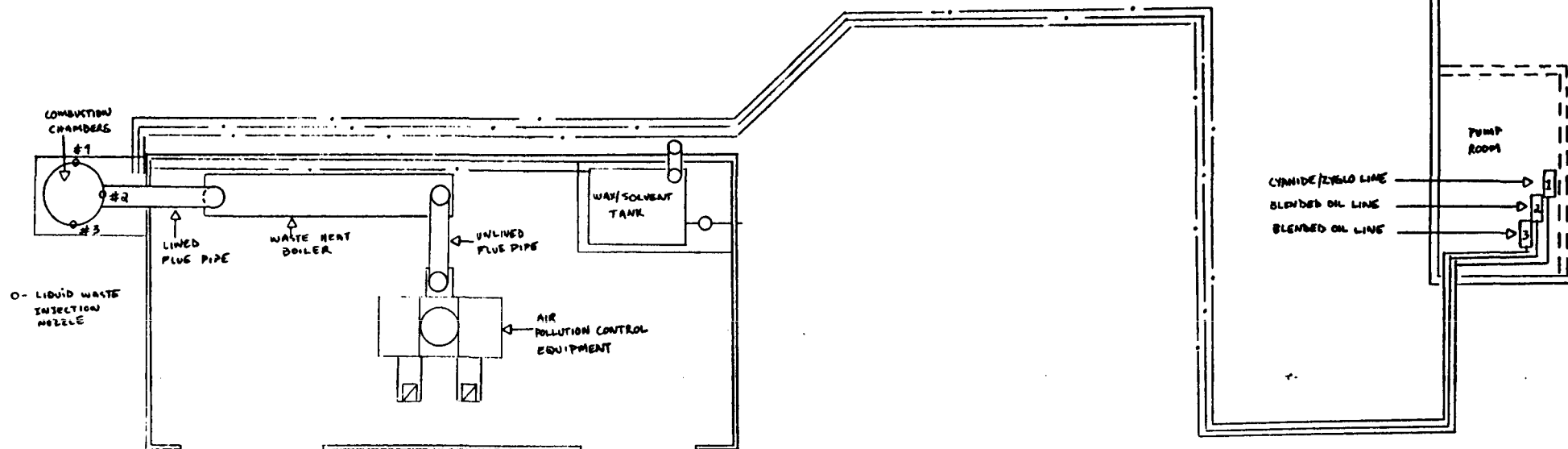
6. List of Minor Departures:


These are discussed in sub-Section 5.2.

APPENDIX A

Drawings of the Incineration System

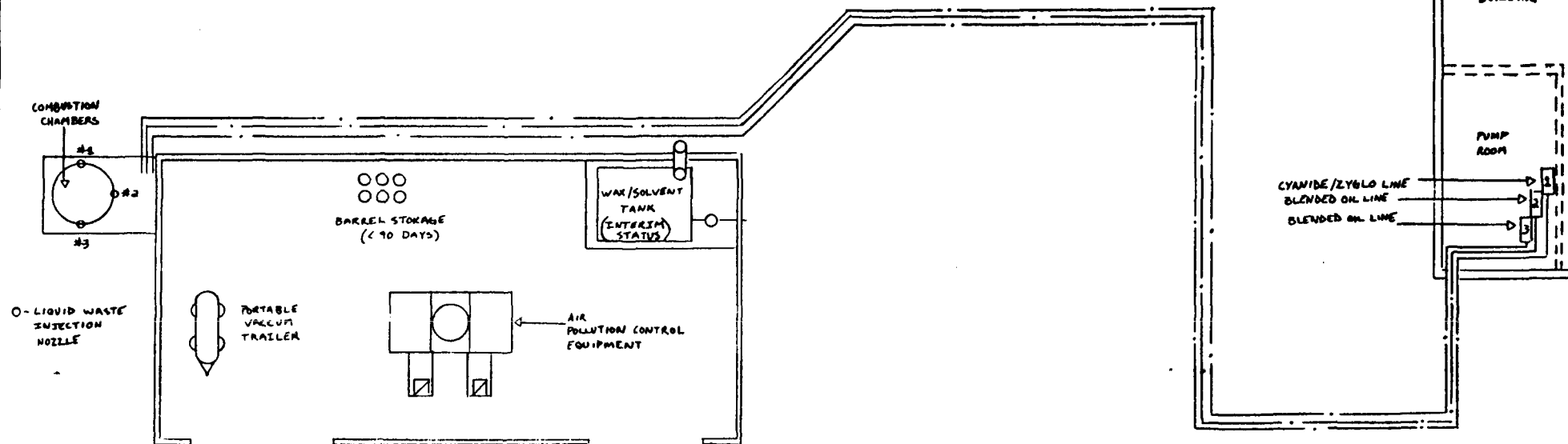
PE - - B



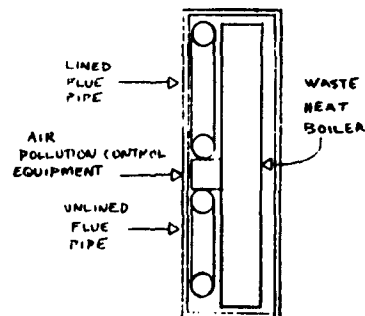
REV.	DESCRIPTION OF REVISION	DATE	DR. BY	APP.
FIGURE 2		LOCATION CWTP		
INCINERATOR SKETCH LAYOUT - PRE 1988		SCALE NOT TO SCALE		
		DRAWN BY SLS	DATE 6/22/89	
		CHK. BY	DATE	
		APP. BY	DATE	
		JOB ORDER NO.		
		DRAWING NO.		
PRATT & WHITNEY AIRCRAFT GROUP  UNITED TECHNOLOGIES. Manufacturing Division PLANT ENGINEERING DEPARTMENT EAST HARTFORD, CONNECTICUT 06108, U.S.A.		PE - - B SHEET NO. NO. OF SHEETS		




PE - - - B



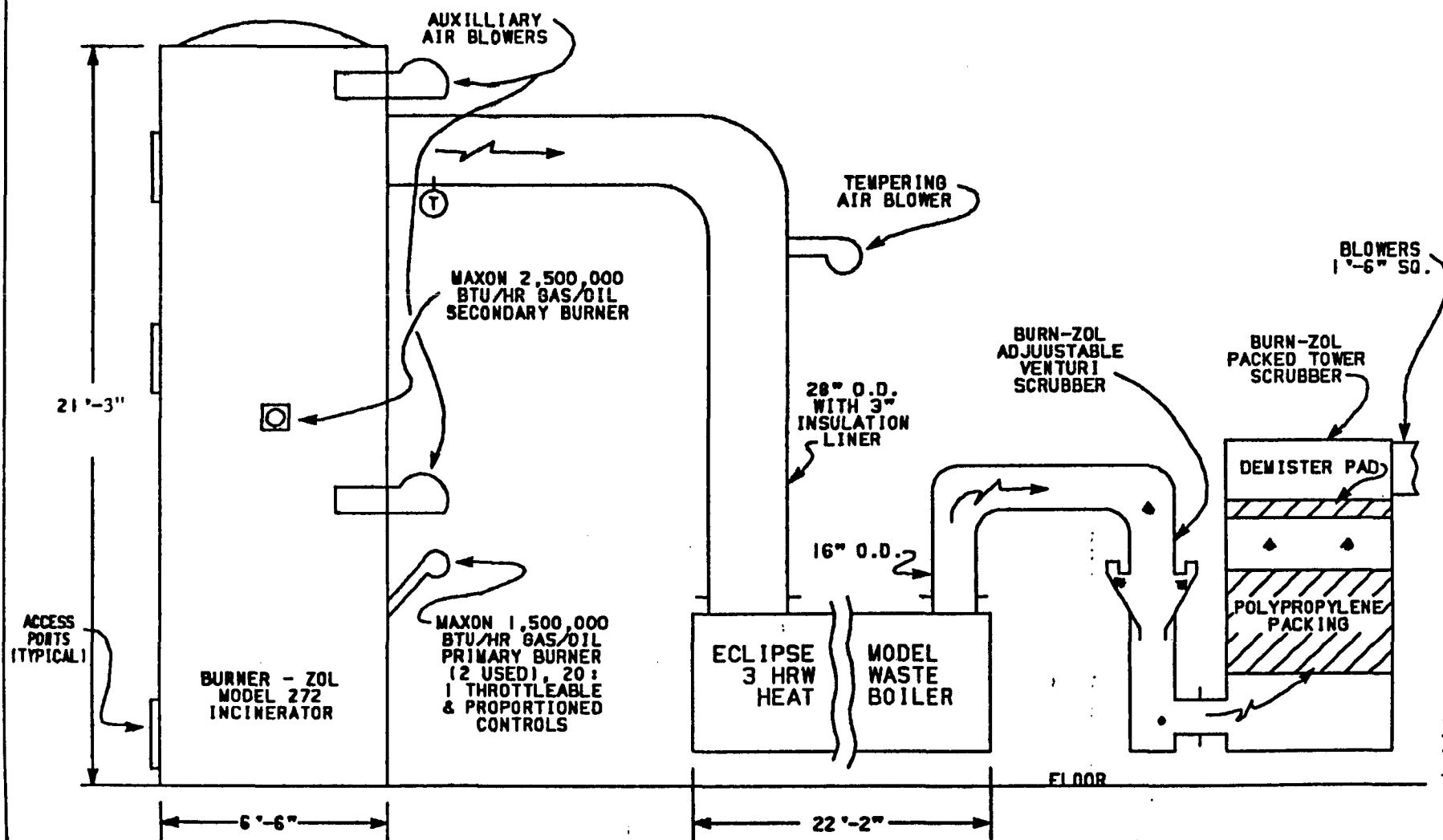
O - LIQUID WASTE INJECTION NOZZLE



REV.	DESCRIPTION OF REVISION	DATE	DR. BY	APPR.
<p>FIGURE 3</p> <p>INCINERATOR SKETCH LAYOUT AS OF JUNE 22, 1989</p>				
<p>PRATT & WHITNEY AIRCRAFT GROUP  UNITED TECHNOLOGIES.</p> <p>Manufacturing Division</p> <p>PLANT ENGINEERING DEPARTMENT</p> <p>EAST HARTFORD, CONNECTICUT 06108, U.S.A.</p>				
<p>LOCATION: CWTP</p> <p>SCALE: NOT TO SCALE</p> <p>DRAWN BY: SLS DATE: 6/22/89</p> <p>CHK. BY: DATE:</p> <p>APP. BY: DATE:</p> <p>JOB ORDER NO.:</p> <p>DRAWING NO.:</p> <p>PE - - - B</p> <p>SHEET NO. NO. OF SHEETS</p>				

HAZARDOUS WASTE INCINERATION SYSTEM

INSTALLED AT
PRATT & WHITNEY, EAST HARTFORD, CONN.



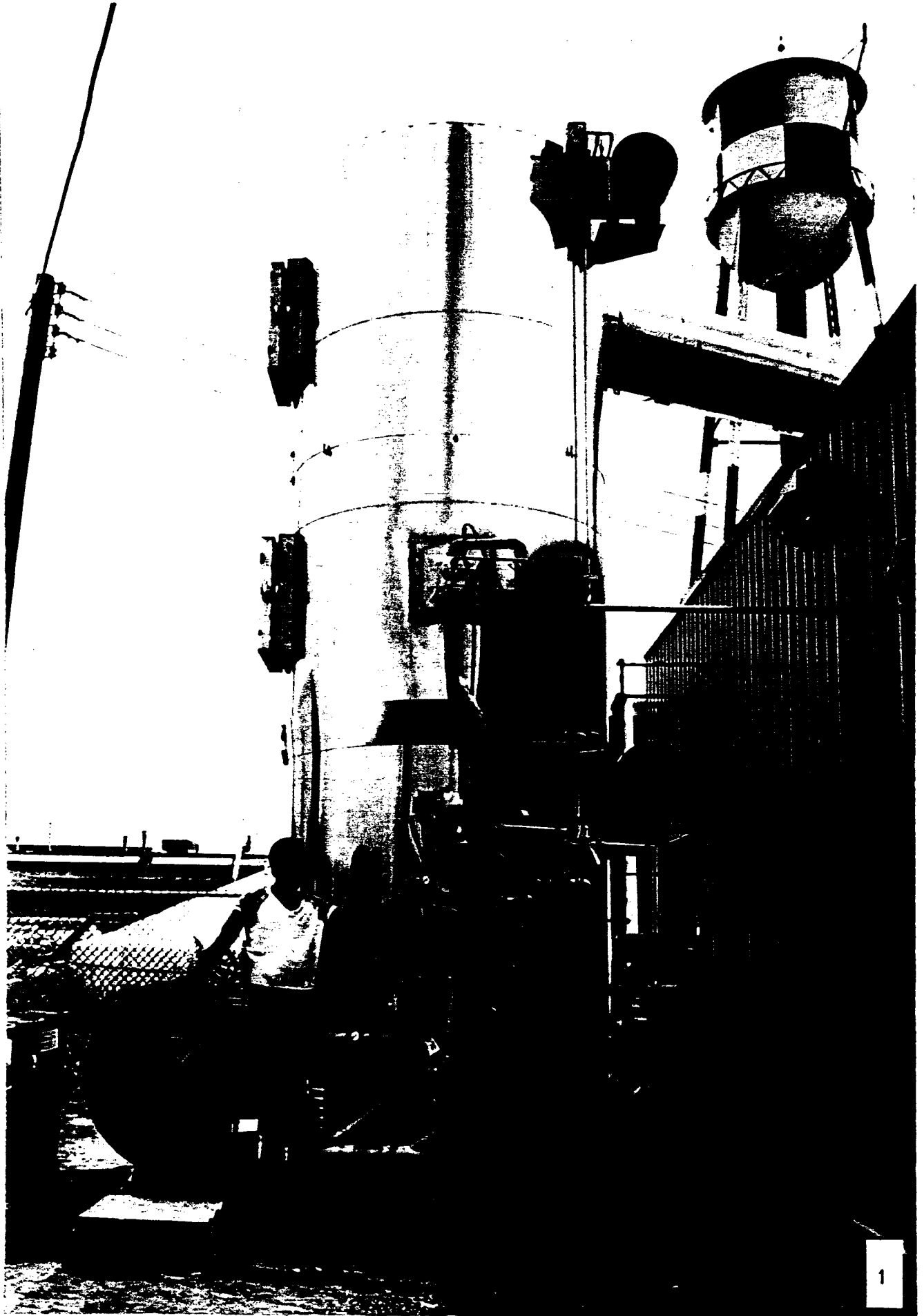
NOTE: A 1,200 ACFM COMBUSTION AIR
BLOWER FEEDS THE 3 INCINERATOR BURNERS

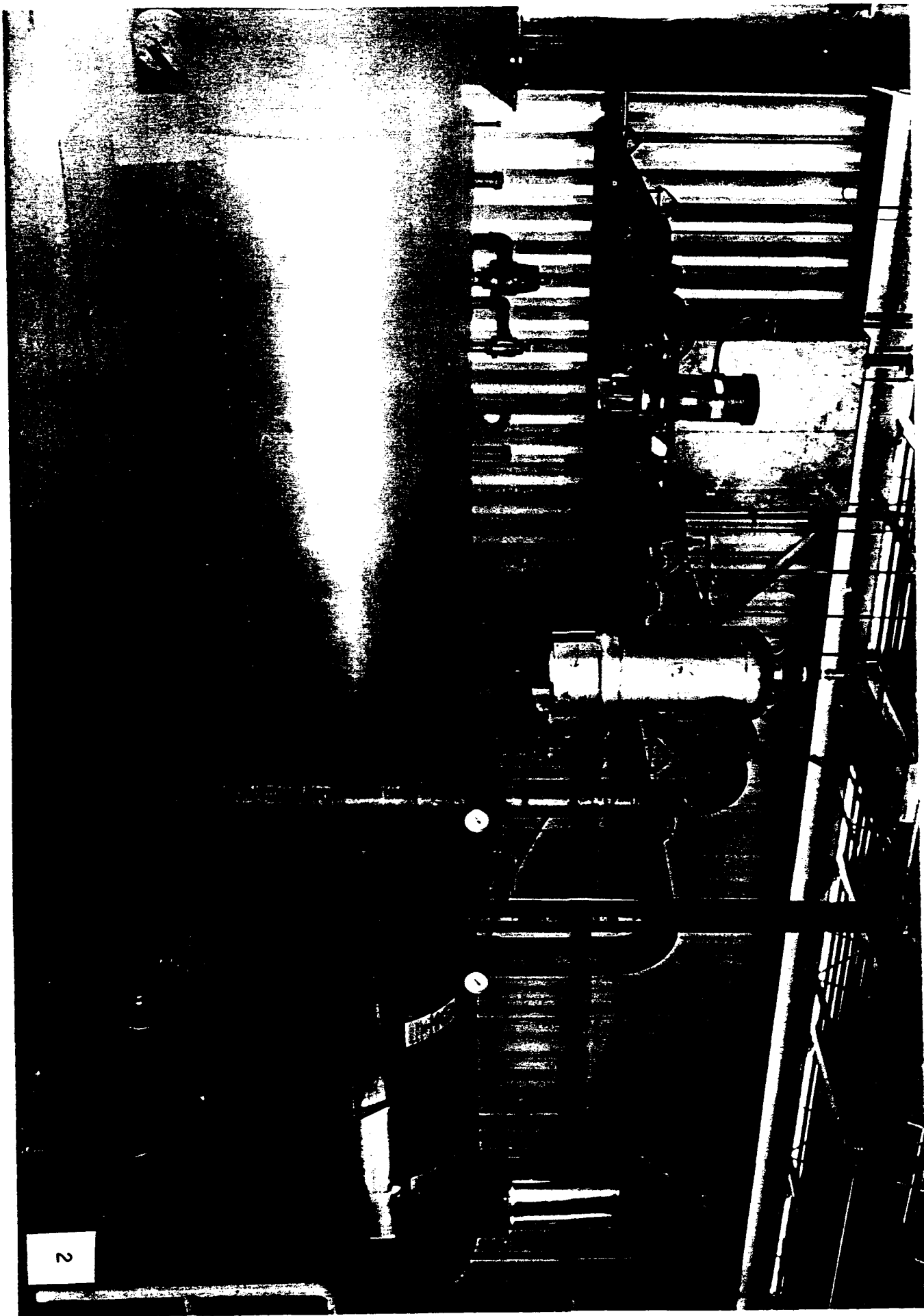
APPENDIX B

Photographs of the Incineration System

LIST OF PHOTOGRAPHS OF THE INCINERATION SYSTEM AS INSTALLED

<u>NUMBER</u>	<u>DESCRIPTION</u>
1	The combustion chamber located outside the building (81C2185-015)
2	The waste heat boiler located inside the building (81C2185-014)
3	The air pollution control system located in the pit inside the building (82C5872-001)







APPENDIX C

List of Constituents Requiring Analysis

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

11.0 TESTING AND DETERMINATION PROCEDURES

A specific analytical parameter list has been developed for all ash/residue, waste feed line rinsate and concrete chip samples collected during incinerator train closure activities. As presented in Table 2 this list is representative of all listed hazardous waste constituents potentially present in the cyanide solution and wax/solvent mixture, the only waste streams burned in the incinerator. In addition, the characteristic hazardous waste parameters of corrosivity and extraction procedure toxicity have been deemed applicable and are therefore included.

TABLE 2

LISTED HAZARDOUS WASTE CONSTITUENT PARAMETERS AND ANALYTICAL METHODS

<u>Parameter</u>	<u>Aqueous</u> (Rinsate)	<u>Solid-Mass Analysis</u> (Concrete chip/ ash/residue)
<u>Metals</u>		
Arsenic	3010/7060	3050/7060
Barium	3010/6010	3050/6010
Cadmium	3010/6010	3050/6010
Chromium (Total)	3010/6010	3050/6010
Chromium VI	-- /7196	-- /7196
Copper	3010/6010	3050/6010
Lead	3010/6010	3050/6010
Mercury	3010/7470	3050/7471
Nickel	3010/6010	3050/6010
Selenium	3010/7740	3050/7740
Silver	3010/6010	3050/6010
<u>Cyanide</u>	-- /9010	-- /9010
<u>Volatile Organic Compounds</u>		
Carbon Tetrachloride	5030/8010	5030/8010
1,1-Dichloroethylene	5030/8010	5030/8010

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

Methylene Chloride	5030/8010	5030/8010
Tetrachloroethylene	5030/8010	5030/8010
1,1,1-Trichloroethane	5030/8010	5030/8010
Trichloroethylene	5030/8010	5030/8010

* 5030/8010 - preparation method / analytical method

The analytical methods presented above have been selected from the third edition of EPA Publication SW-846 - Test Methods for Evaluating Solid Waste. The designated laboratory will follow all applicable internal QA/QC procedures outlined in SW-846.

Upon receipt of the analytical data, an initial evaluation of the results will be performed through data validation. Data validation includes a review of field QA/QC procedures (i.e. trip blanks, field blanks) and laboratory QA/QC procedures (i.e. holding times, blind duplicate analysis, surrogate recoveries). Data points that are not adequately supported by the QA/QC procedures will be referred to the sampling team and/or the laboratory for appropriate corrective actions.

APPENDIX D
Closure Criteria

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

TABLE 1

TARGET CLEANUP LEVELS WASTE FEED LINE RINSATE SAMPLING

<u>CONSTITUENT</u>	<u>CONCENTRATION (mg/l)</u>
Arsenic ¹	0.05
Barium ¹	1.0
Cadmium ¹	0.01
Chromium ¹	0.05
Copper ²	1.0
Lead ¹	0.05
Mercury ¹	0.002
Selenium ¹	0.01
Silver ¹	0.05
Cyanide ³	0.2
Carbon Tetrachloride ¹	0.005
1,1-Dichloroethylene ¹	0.007
Methylene Chloride ⁴	0.025
Tetrachloroethylene ⁴	0.02
1,1,1-Trichloroethane ¹	0.20
Trichloroethylene ¹	0.005

1. EPA Primary Drinking Water Standard (MCL)
2. EPA Secondary Drinking Water Standard (SMCL)
3. Recommended Contaminant Level (RMCL)
4. Connecticut Department of Health Services - Action Level

HAZARDOUS WASTE INCINERATOR CLOSURE PLAN

TABLE 2

HEALTH BASED RISK LEVELS CONCRETE CHIP SAMPLING

<u>CONSTITUENT</u>	<u>CONCENTRATION (mg/kg)</u>
Arsenic	0.02
Barium	900
Cadmium	*
Chromium vi	90
Copper	*
Lead	*
Mercury	*
Nickel	300
Selenium	*
Silver	50
Cyanide	300
Carbon Tetrachloride	2.7
1,1-Dichloroethylene	5.8
Methylene Chloride	47
Tetrachloroethylene	69
1,1,1-Trichloroethane	2000
Trichloroethylene	32

Risk levels obtained from RCRA Facility Investigation (RFI)
Guidance Document (EPA Publication SW-87-001)

* No risk levels identified

APPENDIX E

Copies of Daily Logs

PRATT & WHITNEY
BURN-ZOL HAZARDOUS WASTE INCINERATOR
DAILY FIELD LOG
IT PROJECT NUMBER 515153

Monday 11/13/89

A 5-man crew mobilized from Pittsburgh, Pa., to E. Hartford, Connecticut. After arriving in E. Hartford, the crew contacted Mr. Scott Singer, went to the plant for identification processing, and walked the job site area to discuss objectives and scheduling.

Tuesday 11/14/99

All piping outside of the Burn-Zol unit was dismantled by means of pipe wrenches or cold cutting with reciprocating saw.

Two crew members began removing the outer shell and fiberglass insulation from the large heat exchanger located inside the incinerator building.

All dismantled piping was laid on a double layer of 6 mil polyethylene plastic and covered until a roll off box was delivered.

Wednesday 11/15/89

A crew member continued to dismantle the large heat exchanger while the other two crew members plumbed the waste feed lines to enable us to flush the lines.

Jack Hill from ITFAS arrived on-site to take samples after the waste feed lines had been flushed and rinsed.

At approximately 1330 hours, we began flushing the waste feed lines.

The Blend Oil Line (WFL1) was flushed using a 3-step method:

Step 1 - Approximately 25 gallons of plant tap water was flushed through the line.

Step 2 - Approximately 25 gallons of Citrikleen solution (30%) was pumped through the line.

Step 3 - Approximately 25 gallons of plant tap water was flushed through the line.

The Cyanide Feed Line (WFL3) was flushed using the same 3-step method except that a Sodium Hydroxide solution (25%) was used instead of the Citrikleen solution.

The Zygly Feed Line (WFL2) was blocked somewhere in the line and could not be flushed. A decision was made by Scott Singer to connect steam to the line to loosen the material.

The flushing operation began outside of the incinerator building. Water and solutions were pumped from this point to the pump room under the drum storage building where the affluent was contained in 55-gallon drums.

Plant tap water was sampled for influent background analysis before the flushing process began.

Affluent samples were taken at the end of the third rinse.

Thursday 11/16/89

Refractory brick that was laying inside the Burn-Zol unit was removed by hand.

Refractory from the large heat exchanger was removed by electric chipping hammer and staged on poly inside the incinerator building.

Materials were purchased and construction of the poly barrier began.

The Burn-Zol unit was to be lowered to the ground today, but due to high winds, this operation was postponed until Friday 11/17/89.

Friday 11/17/89

The crew prepared the Burn-Zol unit for lowering it to the ground. Refractory brick that was blocking the top opening was knocked out. A cable was rigged through the top openings.

At approximately 1130 hours, the Burn-Zol unit was lowered to the ground and staged on poly.

The large heat exchanger was moved outside the incinerator building and crew member began torch cutting it.

Saturday 11/18/89

One crew member continued dismantling the large heat exchanger.

Three crew members removing refractory from Burn-Zol unit.

All refractory and tubing from heat exchanger were placed in roll off boxes and covered overnight.

Large pieces of the heat exchanger shell were staged on poly and covered overnight.

Monday 11/20/89

Crew continued to dismantle large heat exchanger and remove refractory from the Burn-Zol unit.

Tuesday 11/21/89

Continued removing refractory from the Burn-Zol unit and started cutting the inner and outer shells.

A steam line was connected to the Zyglo Feed Line (WFL2). Steam was applied to the line for approximately six (6) hours. After approximately 25 gallons of product was retrieved, the line was flushed by the 3-step method by using the Citrikleen solution (30%). Effluent samples of the final rinse were taken by Mr. Scott Singer of PWA.

By the end of the shift, the Burn-Zol unit had been completely dismantled.

Wednesday 11/22/89

The large heat exchanger has been completely dismantled.

The small heat exchanger was moved outside and dismantled.

Construction of the poly barrier was completed.

The incinerator building was cleaned out in preparation of inside work.

The crew returned home for Thanksgiving and will return on-site on Monday, 11/29/89.

Monday 11/27/89

An entrance was constructed through the poly barrier.

The crew began dismantling the large scrubber unit and associated piping.

Tuesday 11/28/89

Waste feed lines in the pump room were removed.

The large scrubber was removed and lowered to the ground. The shell was cut in half, the Tellerette packing was removed, and both halves were staged under poly with the Burn-Zol pieces.

One of the plastic tanks in the pit area was completely dismantled. The second plastic tank was 90 percent dismantled.

Wednesday 11/29/89

All contents of the pit area were dismantled and removed.

Crew began dismantling the air pollution control equipment.

The concrete pad that the Burn-Zol unit was placed on was broken up by means of a hydraulic hammer mounted on a backhoe.

Thursday 11/30/89

Continued dismantling equipment and piping inside the incinerator building.

The exhaust stacks that extended through the roof of the incinerator building were cut down, cut into pieces, and lowered to the ground. The pieces were staged under poly along with the Burn-Zol and heat exchanger pieces.

All pieces of the concrete pad were excavated and placed into roll off boxes. A footer was discovered under the concrete pad. Mr. Scott Singer requested that it also be excavated and removed.

The footer was broken into pieces, excavated, and placed outside the work area. The pieces will be taken off-site by the construction crew that was excavating for foundation work.

Friday 12/1/89

Continued to dismantle equipment and piping inside the incinerator building.

Sample results from waste feed line affluents indicated high concentration of organics. It was decided by Mr. Scott Singer that the three lines be steamed for a number of hours and then filled with Citrikleen solution.

The Blend Oil Feed Line (WFL1) was flushed with steam for 7.5 hours and filled with Citrikleen.

Two roll off boxes were weighed, manifested, and taken off-site for transportation to the CWM Emille, Alabama facility.

Dismantlement of equipment and associated piping inside the incinerator building is 100 percent complete.

A flatbed tractor-trailer arrived on-site to transport the large pieces of steel shells.

Saturday 12/2/89

Seventy percent of all electrical control panels and associated conduit were dismantled and staged on pallets outside the incinerator building. FWA will dispose of these components.

All pieces of the Burn-Zol heat exchanger and scrubber units were loaded onto the flatbed trailer. Side boards were put on and the trailer was tarped and secured.

Flushed the Zyglo Feed Line (WFL2) with steam for five hours.

Monday 12/4/89

Continued dismantling and removing electrical components inside the incinerator building.

Flushed WFL2 with steam for one more hour and then filled it with Citrikleen.

Flushed the Cyanide Feed Line (WFL3) with steam for seven hours.

Dismantlement and removal of equipment inside the incinerator building is 100 percent complete.

The flatbed trailer was weighed, manifested, and transported off-site for disposal.

Tuesday 12/5/89

Filled WFL3 with Citrikleen.

Constructed a decon pad and deconed all equipment and tools by means of steam cleaning.

The floor of the pit area was steam cleaned. The rinsate was pumped out and taken by CWTP personnel.

Wednesday 12/6/89

The ceiling inside the incinerator building was wiped down by means of spraying the ceiling with a Citrikleen solution and wiping with clean lint free cloths.

Thursday 12/7/89

The poly barrier was dismantled and removed from the building.

Jack Hill from ITFAS arrived on-site to take samples.

All three waste feed lines were flushed again using the 3-step method. Effluent samples were taken.

Wipe samples were taken from four areas of the ceiling in the incinerator building. Two background wipe samples were taken over the wax solvent tank area.

Concrete chip samples were taken from the pit area.

Friday 12/8/89

The crew inventoried and packed up all tools and equipment in preparation for demobilization.

The waste feed lines outside the incinerator building were capped.

The last two roll off boxes were weighed, manifested, and transported off-site for disposal.



INTERNATIONAL
TECHNOLOGY
CORPORATION

Crew: T. Dormer
P. Andreas
F. Paul
K. Hohman
J. Pail

DAILY SITE REPORT

Job Name Pratt & Whitney

Date 11/13/89

Job Number 515135

Day Mon

Weather Conditions Sunny, Mild

Site Conditions Dry

Daily Work Description and Comments (tests, changes, claims, etc.):

Mobilized to Hartford Ct. - Met with Scott Singer, completed
Identification process. Walked the jobsite area and discussed
Scheduling

Schedule and Performance Status:

Additional-Extra Unanticipated Cost Factors:

Orders, Directives, Notices and Protests:

Meetings:

Visitors:

T. Dormer



INTERNATIONAL
TECHNOLOGY
CORPORATION

Crew: T. Dormer
P. Andreas
F. Paul
K. Hohnan
J. Paul

DAILY SITE REPORT

Job Name Pratt & Whitney

Date 11/14/89

Job Number 515153

Day Tue

Weather Conditions Sunny, Warm

Site Conditions Dry

Daily Work Description and Comments (tests, changes, claims, etc.):

0700 - Tailgate Safety Meeting

0715 - Unloaded Trailer

0730 - Began dismantling all piping from the Burn-201 unit. Piping was removed with pipe wrenches or by cold cutting with sawzalls. 30 min. delay because of an air line still live. P&W's maintenance man worked on shutting it off. All piping was laid on plastic & covered.

1330 - All piping removed from Burn-201. Began removing sheeting & insulation from large heat exchanger inside the building - Continued til' end of shift

1400 - Began disconnecting piping in pump room

Schedule and Performance Status: All piping removed from Burn-201 unit - Flush lines tomorrow. Crane scheduled for Thurs.

Additional-Extra Unanticipated Cost Factors:

Orders, Directives, Notices and Protests:

Meetings: Meeting with Scott Singer about Time Sheets, Site Reports, Scheduling

Visitors:

Front End Loader Delivered

Tom Dormer



INTERNATIONAL
TECHNOLOGY
CORPORATION

Crew T. Dorrer
P. Anderson
J. Hill
J. Hill

DAILY SITE REPORT

Job Name Pratt & Whitney

Date 11/15/89

Job Number 515153

Day Wed

Weather Conditions Rain in AM 60°

Site Conditions Wet

Daily Work Description and Comments (tests, changes, claims, etc.): 0700- Tailgate Safety Meeting

0715- 2 men removing refractory insulation from ends of heat exchanger (boiler)

2 men doing plumbing necessary for line flushing

1000- Jack Hill from IT on site

1100- All pumps & hoses set up - ready for flushing lines

- Waiting on Larry Lucas for radios -

1330 - Started flushing lines - flushed 1 waste oil line and the cyanide

line. Jack Hill took samples after the third rinse. The 2nd waste oil line is
blocked.

1630- Plumbed an airline to the blocked oil line but it would not clear. Will
try steam when its available

Schedule and Performance Status: The blocked oil line will be flushed when
steam is available

Additional-Extra Unanticipated Cost Factors: _____

Orders, Directives, Notices and Protests: _____

Meetings: _____

Visitors: Jack Hill- IT FAS, Edison N.J.

2nd Man lift delivered

John Dorrer



Crew: T Dormer
P. Anderson
F. Paul
K. Hohnman
J. Paul

DAILY SITE REPORT

Job Name Pratt & Whitney

Date 11/16/89

Job Number 5-5153

Day Thur

Weather Conditions Heavy rain, high winds

Site Conditions Wet

Daily Work Description and Comments (tests, changes, claims, etc.): 0700: Tailgate Safety Meeting

0715 - Started removing refractory from inside Burn-zol incinerator.

- Loaded material into bucket of front loader

- Loaded refractory from heat exchanger into bucket of front loader

- Covered front loader bucket with poly

- Cleaned up area around heat exchanger

1300 - Purchased lumber and began constructing poly barrier. Frame work finished by end of shift

Schedule and Performance Status: Will not attempt to lower Burn-zol unit because of weather condition

Additional-Extra Unanticipated Cost Factors: _____

Orders, Directives, Notices and Protests: _____

Meetings: Meeting with Scott Singer - Discussed flushing of blocked oil line. Possibility of a closed valve near the storage area. Steam is now available if needed

Visitors: _____

Tom Dormer



INTERNATIONAL
TECHNOLOGY
CORPORATION

Crew: T. Dormer
P. Andreas
F. Paul
K. Hohman
J. Pail

DAILY SITE REPORT

Job Name Pratt + Whitney

Date 11/17/89

Job Number 515/153

Day Fri

Weather Conditions Clear, Cold

Site Conditions Dry

Daily Work Description and Comments (tests, changes, claims, etc.): 0700 Tailgate Safety Meeting
0715 - Began preparing to lower Burn-201 unit to ground. Knocked out refractory
brick that was blocking the top opening. Moved Roll Off box to the front of the
incinerator bldg.
0900 - Applied for Burning Permit. Dragged the heat exchanger outside & began cutting it
1000 - Crane operator from PWA arrived. Rigged a cable thru the top port of the
Burn-201 unit & hooked on to the crane.
1130 - Burn-201 unit lowered to the ground, then staged outside ~~in~~ the incinerator
bldg. on poly
1400 - Began cutting the outer shell of the Burn-201 unit
1700 - Top half of heat exchanger removed. All pieces covered overnight

Schedule and Performance Status: _____

Additional-Extra Unanticipated Cost Factors: _____

Orders, Directives, Notices and Protests: _____

Meetings: _____

Visitors: _____

Tom Dormer



INTERNATIONAL
TECHNOLOGY
CORPORATION

DAILY SITE REPORT

Crew
T. Dormer
P. Andreas
F. Paul
K. Hohman
J. Pail

Job Name Pratt + Whitney

Date 11/18/89

Job Number 515153

Day Sat

Weather Conditions Cloudy, Cold

Site Conditions Dry

Daily Work Description and Comments (tests, changes, claims, etc.): 0700 - Tailgate Safety Meeting

0715 - 1 man cutting heat exchanger

3 men removing refractory from Burn 2d unit

Continued these operations til end of shift at 1530

All pieces covered with poly at end of shift

Schedule and Performance Status: _____

Additional-Extra Unanticipated Cost Factors: _____

Orders, Directives, Notices and Protests: _____

Meetings: _____

Visitors: _____

John Dormer



INTERNATIONAL
TECHNOLOGY
CORPORATION

Equipment: 1 - pick up
1 - 3yd Loader
2 - Man Lifts
2 - Demo Saws
2 - Demo Hammers
1 - Roll off
1 - Equip. Trailer 1 - Roll off Box

Grew: T. Dörner
P. Andreas
F. Paul
K. Nohman
J. Paul

DAILY SITE REPORT

Job Name Pratt & Whitney

Date 11/20/89

Job Number 515153

Day Mon

Weather Conditions Cloudy, Cool, Rain in AM

Site Conditions wet

Daily Work Description and Comments (tests, changes, claims, etc.): 0700 - Tailgate Safety Meeting
0715 - Continued dismantling heat exchanger and removing refractory
from Burn-201 unit for entire day.

1730 - End of Shift

Schedule and Performance Status: 2nd Roll Off being delivered tomorrow.
Will attempt to flush 2 cycle line with steam tomorrow.

Additional-Extra Unanticipated Cost Factors: _____

Orders, Directives, Notices and Protests: _____

Meetings: _____

Visitors: _____

Tom Dörner



Equipment: 1- Pick up
1- Equip. trailer
1- 3yd loader
1- man lift
1- Sissors lift
2- Demo Saws
2- Demo Hammers
2- Roll off boxes

Crew: T. Dormer
P. Andreas
F. Paul
K. Hohman
J. Pail

DAILY SITE REPORT

Job Name Pratt + Whitney

Date 11/21/89

Job Number 515153

Day Tue

Weather Conditions Cold, Windy

Site Conditions Dry

Daily Work Description and Comments (tests, changes, claims, etc.): 0700 - Tailgate Safety Meeting

0715 - 1 man cutting shell of Burn 2d unit

1 man removing refractory - 2 men hooking up steam line to 2ygd line

0800 - Turned on steam to 2ygd line - very little coming out other end

0830 - All refractory removed from ~~2ygd line~~ Burn 2d unit

1100 - Retrieved approx 25 Gal of Green liquid from 2ygd line. Shut off steam.

Re-plumbing to run water thru line.

1230 - 2nd Roll Off Box delivered. Weighed the full one - 10,000 lbs over - will have to take off

1400 - ~~2ygd line~~ Flushed 2ygd line with water, Citric acid, water. Clear water coming out.

1445 - Scott Singer takes samples of final flush water

1730 - End of Shift

Schedule and Performance Status: Burn 2d dismantling completed. Large heat exchanger dismantling 90% complete

Additional-Extra Unanticipated Cost Factors: _____

Orders, Directives, Notices and Protests: _____

Meetings: _____

Visitors: _____

Exchanged Manlift for 1 Sissors lift



INTERNATIONAL
TECHNOLOGY
CORPORATION

Equipment: 1- Pickup
1- Equip Trailer
1- 3yd loader
1- Man lift
1- Sissor lift
2- Demo Saws
2- Demo Hammers
2- Roll off boxes

Crew: T. Dorner
P. Andrews
K. Hohman
J. Pail
J. Sardello

DAILY SITE REPORT

Job Name Pratt + Whitney

Date 11/22/89

Job Number 515153

Day Wed

Weather Conditions Clear, Cold

Site Conditions Dry

Daily Work Description and Comments (tests, changes, claims, etc.): 0700 - Tailgate Safety Meeting

0715 - Continued dismantling large heat exchanger

0730 - Began construction of polyethylene wall

0900 - Large heat exchanger completely dismantled

0930 - placed small heat exchanger outside + began dismantling

1200 - small heat exchanger completely dismantled - placed in roll off

1300 - Poly wall completed

1330 - Cleaned out incinerator room of all debris

1400 - Placed all equipment inside incinerator room

- Covered roll off boxes + Burn 201 pieces

1430 - End of Shift

Schedule and Performance Status: Flat bed scheduled for Tue (11/28/89) for
Transporting pieces of Burn 201 unit

Additional-Extra Unanticipated Cost Factors: _____

Orders, Directives, Notices and Protests: _____

Meetings: _____

Visitors: _____

Tom Dorner



Equipment: 1- Pick up
1- Equip trailer
1- 3yd loader
1- Man lift
1- Sissor Lift
2- Dem Saws
2- Roll Off Boxes

Crew: T. Dormer
P. Andreas
K. Hohman
T. Paul
T. Sardello

DAILY SITE REPORT

Job Name Platt + Whitney

Date 11/27/89

Job Number 515153

Day Mon

Weather Conditions Clear, Cool

Site Conditions Dry

Daily Work Description and Comments (tests, changes, claims, etc.): 1200: Arrived on Site

1300 - Constructed a doorway thru the poly wall.

1330 - Began dismantling scrubber unit

1630 - Began removing pipe inside pump room

1730 - End of Shift

Schedule and Performance Status: Sea Land cannot supply Roll Off boxes when needed.
Contacted Freehold Cartage Inc. of Freehold N.J. . They will deliver
a roll off box tomorrow

Additional-Extra Unanticipated Cost Factors: _____

Orders, Directives, Notices and Protests: _____

Meetings: _____

Visitors: _____

Tom Dormer



INTERNATIONAL
TECHNOLOGY
CORPORATION

Equipment: 1- Pick up
1- Equip trailer
1- 2yd loader
1- Man lift
1- Sissor Lift
2- Demo sand
3- Roll off Boxes

Crew: T. Dormer
P. Andreas
K. Hohman
T. Paul
J. Sardello

DAILY SITE REPORT

Job Name Pratt + Whitney

Date 11/28/89

Job Number 515153

Day Tue

Weather Conditions Cool, Rain in AM

Site Conditions Wet

Daily Work Description and Comments (tests, changes, claims, etc.): 0700 - Tailgate Safety Meeting

0715 - Two men continue removing pipes from pump room.

- Two men continue dismantling scrubber

1100 - All piping & conduit attached to scrubber removed. Torch cut part of railing around pit. Extracted scrubber from pit area by forklift.

1300 - Laid scrubber down on the floor & began saw cutting in half

- 2 men begin cleaning out pit area

1530 - Scrubber unit is cut in half - Top half staged outside. Began removing Tellerette packing & placing in roll off.

1700 - Scrubber unit completely dismantled, 1 Plastic tank in pit completely dismantled

2nd tank 90% dismantled 1730 - End of Shift

Schedule and Performance Status: Flatbed trailer for Burn 201 pieces didn't arrive

Additional-Extra Unanticipated Cost Factors: Hit overhead heater with forklift when moving scrubber unit - Steam leaking. Shut off steam

Orders, Directives, Notices and Protests: _____

Meetings: _____

Visitors: _____

1100 - Roll off box from Freehold Cartage Inc. delivered



INTERNATIONAL
TECHNOLOGY
CORPORATION

Equipment: 1- Pick up
1- Equip Trailer
1- 2yd loader
1- man lift
1- scissor lift
2- Deere saws
3- Roll off Boxes
1- Cat 416 Backhoe/Loader

Crew: T. Danner
P. Andreas
K. Nohman
J. Pail
J. Sardello

DAILY SITE REPORT

Job Name Pratt + Whitney

Date 11/29/89

Job Number 515153

Day Wed

Weather Conditions Clear, Cold

Site Conditions Dry

Daily Work Description and Comments (tests, changes, claims, etc.): 0700 - Tailgate Safety Meeting

0715 - Continued dismantling contents of pit: Plastic tank, motors, steel frame, etc.

1100 - Pit area completely cleaned out. Man from CWTP pumped out water from pit

1300 - Began removing air pollution control equipment

1400 - Backhoe with hammer attachment delivered; Began breaking up BurnZol pad

1600 - BurnZol pad broken up, will load into roll offs on Thurs or Fri

1630 - Transferred some debris from Roll off #1 to Roll off #2

1730 - End of shift

Schedule and Performance Status: Dismantling of equipment inside bldg. 75% Complete. 4th Roll Off Box delivered tomorrow

Additional-Extra Unanticipated Cost Factors: _____

Orders, Directives, Notices and Protests: _____

Meetings: Meeting with Scott Singer - Sample results from Blend Oil Feed line indicates high concentration of Organics. Will flush with steam

Visitors: _____

For Danner



INTERNATIONAL
TECHNOLOGY
CORPORATION

Equipment:
1- Pick up
1- Equip. trailer
1- 2yd loader
1- Cat 416 backhoe
1- Man lift
1- Sissor lift
2- Deere Saws
4- Roll Off Boxes

Crew: T. Dormer
P. Andreas
K. Hohman
J. Paul
J. Sardello

DAILY SITE REPORT

Job Name Pratt + Whitney

Date 11/30/89

Job Number 515153

Day Thurs.

Weather Conditions Cloudy, Cold

Site Conditions Dry

Daily Work Description and Comments (tests, changes, claims, etc.): 0700 - Tailgate Safety Meeting

0715 - Continue dismantling equipment inside bldg.

1030 - Bucket for backhoe delivered - mounting onto backhoe

1045 - 2 men on roof of Bldg cutting down exhaust stacks

1045 - 4th Roll Off Box delivered

1330 - Both exhaust stacks cut into pieces and lowered from roof

1400 - All concrete from Burn 201 pad removed. Discovered footer around the perimeter of the pad. Will excavate and remove as per Scott Singer

1600 - Excavated around footer under Burn 201 pad. Footer is 1 piece - will have to demolish with hydraulic hammer

1730 - End of Shift - Footer demolished + excavated; backfilled hole

Schedule and Performance Status: Removing equipment from inside of bldg. 90% Complete. Cannot plumb steam into broken pipes in pump room - will attempt this Tomorrow

Additional-Extra Unanticipated Cost Factors: _____

Orders, Directives, Notices and Protests: _____

Meetings: _____

Visitors: Bill Gadie, Skip Brennan - IT Corp.

T. Dormer



INTERNATIONAL
TECHNOLOGY
CORPORATION

Equipment
1- Pickup
1- Equip Trailer
1- 2 yd loader
1- Cat 416 Backhoe/Loader
1- Man Lift
1- Scissor Lift
2- Demo Saws
4- Roll Off Boxes

Crew
T. Dornier
P. Andreas
K. Nohaman
T. Paul
J. Sardello

DAILY SITE REPORT

Job Name Pratt+Whitney

Date 12/1/89

Job Number 515153

Day Fri

Weather Conditions Clear, Cold

Site Conditions Dry

Daily Work Description and Comments (tests, changes, claims, etc.): 0700 - Tailgate Safety Meeting

0745 - Continued dismantling equipment inside bldg.

- Discovered that there is still power in one of the control panels to be removed. Contacted Rich - he'll get an electrician to lock it out.

0900 - Truck from Sea Land arrived to transport 1 roll off box to landfill

1300 - Plumbing product feed lines to flush with steam

1330 - Truck from Sea Land arrived for 2nd Roll Off. Both Roll Offs weighed, manifested and transported off site

1400-1700 - Flushed WFL1 with steam

1600 - Flat bed truck arrives

1730 - End of Shift

Schedule and Performance Status: Dismantling of equipment inside bldg 100% complete. will dismantle all electrical components tomorrow

Additional-Extra Unanticipated Cost Factors: _____

Orders, Directives, Notices and Protests: Cut and remove copper water line feeding the wax solvent tank - as per Rich.

Meetings: _____

Visitors: _____

T. Dornier



INTERNATIONAL
TECHNOLOGY
CORPORATION

Equipment: 1- Pickup
1- Equip. Trailer
1- 2yd loader
1- Cat 416 Backhoe/Loader
1- Man Lift
1- Sissor Lift
2- Demo Saws
2- Roll Off Boxes

Crew T. Dorman
P. Andrews
K. Hohman
J. Paul
J. Sardello

DAILY SITE REPORT

Job Name Pratt + Whitney

Date 12/2/89

Job Number 515153

Day Sat.

Weather Conditions Cloudy, Cold

Site Conditions Dry

Daily Work Description and Comments (tests, changes, claims, etc.): 0700 - Tailgate Safety Meeting

0715 - 2 men inside bldg removing electrical components

- 3 men loading Flat bed with Burn 2d pieces

0800 - Continued flushing WFL 1 with steam until 1030

1030 - Started Flushing WFL 2 with steam

1300 - All pieces of Burn 2d unit + scrubber unit loaded onto Flat bed.

1330 - Piece of conduit loaded into Non Hazardous roll off box.

1400 - 2 large pieces of Burn 2d exhaust flue were broken up and placed into roll off box

1530 - End of Shift

Schedule and Performance Status: Removal of electrical components 70% complete. Manlift not working - need mechanic in on Monday

Additional-Extra Unanticipated Cost Factors: _____

Orders, Directives, Notices and Protests: _____

Meetings: _____

Visitors: _____

T. Dorman



INTERNATIONAL
TECHNOLOGY
CORPORATION

Equipment: 1- Pick up
1- Equip Trailer
1- 2 yd Loader
1- Cat 416 Backhoe/loader
1- Man Lift
1- Sissor Lift * 1- Fork Lift
2 Dem Saw
2 Roll Off Boxes

Crew: T. Dornier
P. Andrews
K. Hohman
J. Paul
J. Sardella

DAILY SITE REPORT

Job Name Pratt & Whitney

Date 12/4/81

Job Number 515153

Day Mon

Weather Conditions Clear Cold

Site Conditions Dry, Icy

Daily Work Description and Comments (tests, changes, claims, etc.): 0700 - Tailgate Safety Meeting

0715 - Continued removing electrical components

0730 - Continued flushing WFL 2 because the effluent is still greenish in color and has an odor to it.

0730 - Effluent from WFL 2 appears cleaner & free from odor. Switched steam over to WFL 3

1130 - Removal of electrical components 100% complete

1400 - 1500 - Filled WFL 1 & 2 with CitriKleen

1530 - Shut off steam to WFL 3

1530 - 1730 - Removed extra piping & cleaned inside of bldg

1730 - End of Shift

Schedule and Performance Status: Removal of all equipment inside bldg 100% complete
Will decon equipment, steam clean the pit and start wiping ceiling tomorrow

Additional-Extra Unanticipated Cost Factors: _____

Orders, Directives, Notices and Protests: _____

Meetings: _____

Visitors: _____

Tom Dornier

Equipment: 1- Pick up
1- Equip Trailer
1- 2yd loader
1- Cat 416 Loader
1- Fork Lift
1- Man Lift
1- Sissor Lift 1- Steam Cleaner
2- Demo Saws
2- Roll Off Boxes

Crew: T. Dormer
P. Andreas
K. Hohman
J. Paul
J. Sardello



INTERNATIONAL
TECHNOLOGY
CORPORATION

DAILY SITE REPORT

Job Name Pratt+Whitney

Date 12/15/89

Job Number 515153

Day Tue

Weather Conditions Clear, Cold

Site Conditions Dry

Daily Work Description and Comments (tests, changes, claims, etc.): 0700 - Tailgate Safety Meeting

0715 - Started filling WFL 3 with Citrikleen

0800 - Constructed a decon pad

0830 - Steam Cleaner delivered

0900 - Began Decanning heavy equipment

1000 - Began Steam Cleaning pit area

1100 - Took a sample of rinse water from pit area & tested. Results still

indicate cyanide - will pump off water into portable tank supplied by CWP

1300 - Finish Steam Cleaning Pit - Pumped off water - vacuum water - Scraped out

the sump - blew air on pit floor to dry.

1510 - Tried shot blasting the pit floor. Shot Blaster will not work 1730 - End of Shift

Schedule and Performance Status: Start waxing ceiling Tomorrow

Additional-Extra Unanticipated Cost Factors: Sealed Trucks cannot enter Emille - No approval
from State yet. Extra charges for demurrage anticipated

Orders, Directives, Notices and Protests: _____

Meetings: _____

Visitors: _____

Tom Dormer



INTERNATIONAL
TECHNOLOGY
CORPORATION

Equipment: 1- Pick Up
1- Equip Trailer
1- 2 yd Loader
1- Cat 416 Backhoe
1- Fork Lift
1- Man Lift
1- Sissor Lift
2- Roll off Boxes

Crew: T. Dormer
P. Andreas
K. Nohman
J. Paul
J. Sardello

DAILY SITE REPORT

Job Name Pratt & Whitney

Date 12/6/89

Job Number 515153

Day Wed

Weather Conditions Cloudy, Cold

Site Conditions Dry

Daily Work Description and Comments (tests, changes, claims, etc.): 0700 - Tailgate Safety Meeting
0730 - Crew begins ceiling wipe down. 2 men in Sissor Lift starting
in South West Corner of building & working their way West. 2 men
in the man lift starting in the North West corner of the bldg and working
their way East.

1200 - 2/3 of ceiling complete

1230 - Continue wiping ceiling

1630 - Finish wiping ceiling

1730 - End of Shift

Schedule and Performance Status: Wipe down of ceiling 100% complete. All
sampling will be done tomorrow

Additional-Extra Unanticipated Cost Factors: _____

Orders, Directives, Notices and Protests: _____

Meetings: _____

Visitors: _____

Tom Dormer



INTERNATIONAL
TECHNOLOGY
CORPORATION

DAILY SITE REPORT

Job Name Pratt & Whitney

Date 12/8/89

Job Number 515153

Day ~~Wed~~ Thurs

Weather Conditions Clear, Cold

Site Conditions Dry

Daily Work Description and Comments (tests, changes, claims, etc.): 0700 - Tailgate Safety Meeting

0715 - Crew dismantling Poly wall.

0800 - Plumbing waste feed lines

1045 - Jack Hill from FAS arrives on site

1145 - Begin Flushing waste feed lines & sampling - 1230 Finish

1230 - Started Taking Chip samples from pit area

1430 - Scott Sager - Jack Hill begin wipe sampling ceiling

1630 - Wipe Sampling of ceiling complete

1730 - End of Shift

Schedule and Performance Status: _____

Additional-Extra Unanticipated Cost Factors: _____

Orders, Directives, Notices and Protests: _____

Meetings: _____

Visitors: Jack Hill - IT FAS



INTERNATIONAL
TECHNOLOGY
CORPORATION

DAILY SITE REPORT

Job Name Draft & Whitney

Date 12/8/89

Job Number 515153

Day Fri

Weather Conditions Cloudy, Cold

Site Conditions Dry

Daily Work Description and Comments (tests, changes, claims, etc.):

0700 - Crew Inventory Equipment & Materials
- Loading Trailer

0800 - Dismantled Step by Trailer. Plugged waste feed lines outside of bldg.

0930 - Front End loader taken off site

1000 - Man Lift & Sissor Lift taken off site

1230 - Truck from Freehold Cartage arrives on site - weighs & manifests
1 roll off box. Weighs 2nd roll off box. 2nd truck not
expected til late afternoon

* 2nd Truck expected on site between 1400-1500

Schedule and Performance Status: IT's Rental Equipment still to be picked up
- Office Trailer, 10 bottles of Oxygen & acetylene

Additional-Extra Unanticipated Cost Factors:

Orders, Directives, Notices and Protests:

Meetings:

Visitors:

For [Signature]

APPENDIX F

Photographs Showing Closure Activities



1. Incinerator train components dismantled and stored on-site in 1988. These included the waste heat boiler (back), the heat exchanger (front left), the flue piping and a portion of the air pollution control equipment.

June 21, 1989



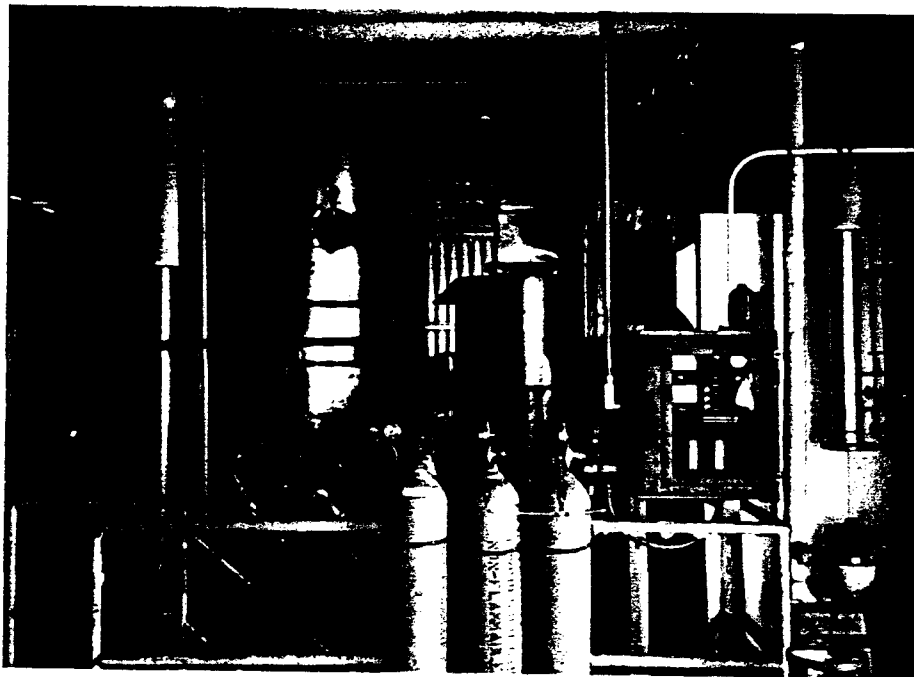
2. Incinerator train components (center) and the dedicated enclosure (right) for these.

June 21, 1989



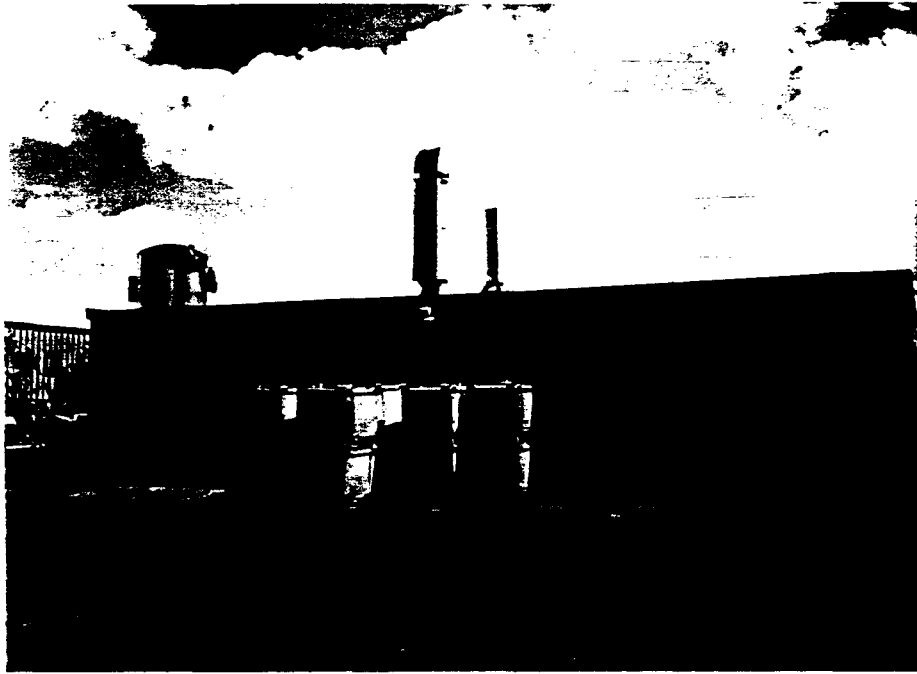
3. The combustion chamber and the associated above ground piping prior to start of closure.

June 23, 1989



4. The air pollution control equipment located inside the building in a pit.

June 23, 1989



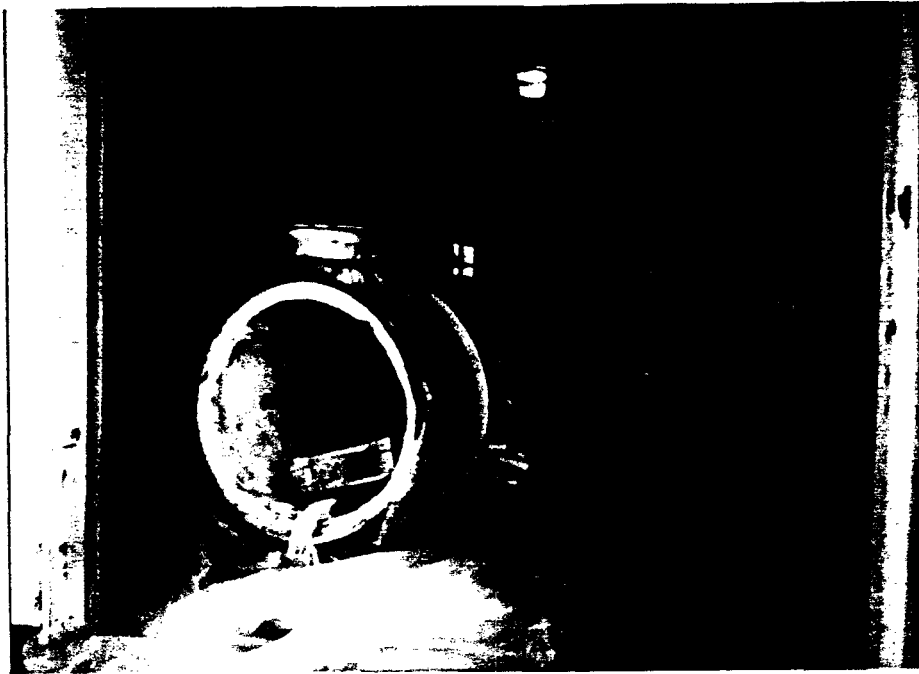
5. The outside view of the building that houses the active wax/solvent storage tank and the air pollution control equipment. The combustion chamber is located on the side of the building and the exhaust stacks are located on top of the building.

June 23, 1989



6. Ground is covered with plastic sheet prior to dismantling of outside piping for storing dismantled piping.

November 14, 1989



7. Insulation removal from the large heat exchanger.

November 14, 1989



8. Waste feed line decontamination set up.

November 15, 1989



9. Rinsate collection system for waste feed line decontamination set up.

November 15, 1989



10. Waste feed line flushing.

November 15, 1989



11. Rinsate collection from waste feed line flushing operation.

November 15, 1989



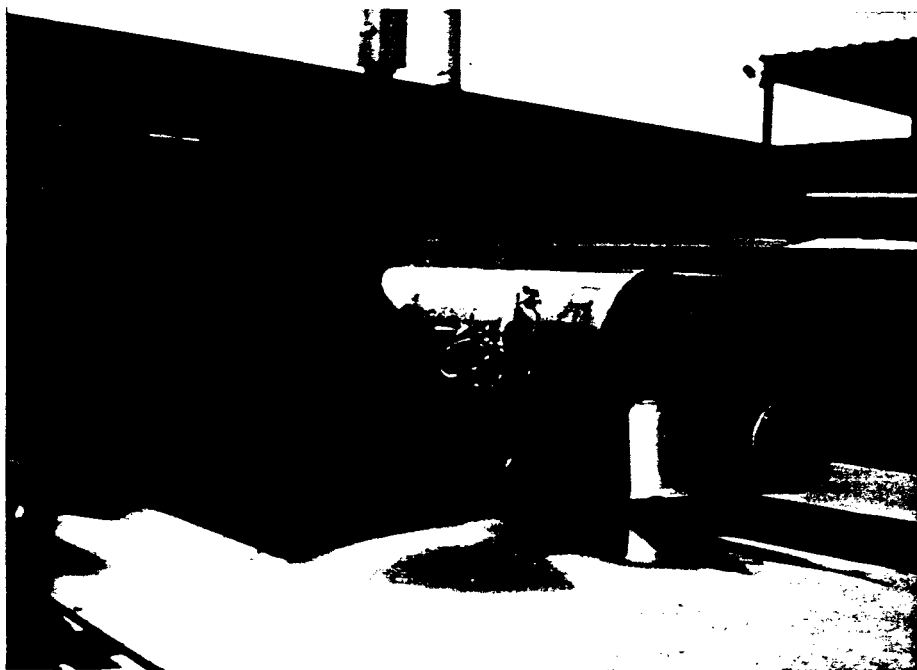
12. Plastic barrier inside the building.

November 16, 1989



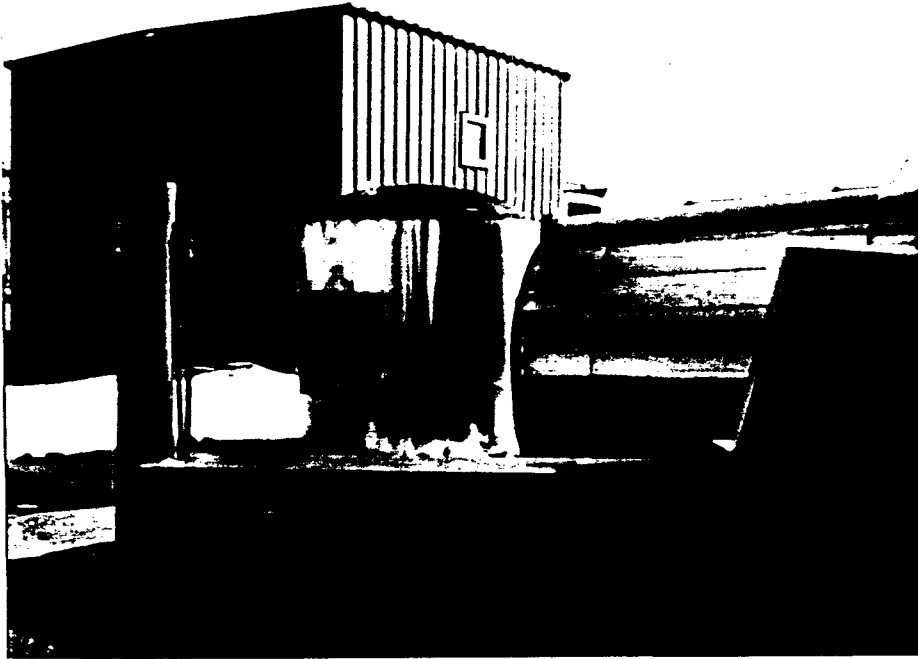
13. Preparation for dismantling the combustion chamber.

November 17, 1989



14. Removal of the large heat exchanger.

November 17, 1989



15. The combustion chamber is dismantled and lowered to ground.

November 17, 1989



16. Removal of refractory from combustion chamber.

November 20, 1989



17. Dismantled combustion chamber and heat exchanger.

November 22, 1989



18. Combustion chamber pad after removal of the combustion chamber.

November 22, 1989



19. Concrete pad prior to removal.

November 29, 1989



20. Concrete pad completely broken up.

November 29, 1989



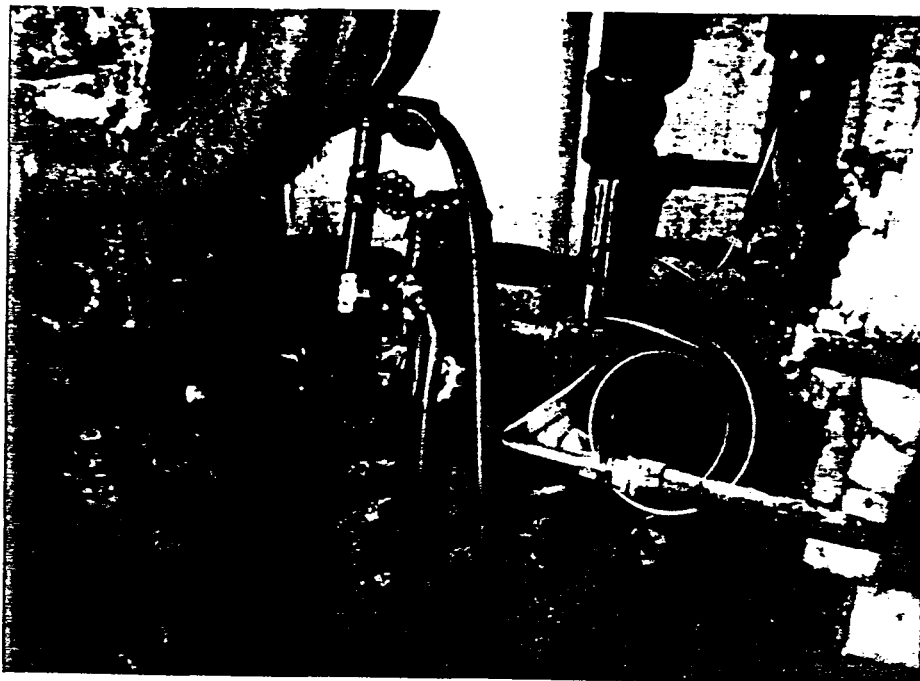
21. Concrete pad completely removed.

November 29, 1989



22. Boarded, tarped and secured flat bed trailer containing large dismantled equipment pieces ready for transport.

December 2, 1989



23. Final round of waste feed line flushing.

December 7, 1989



24. Final round of rinsate collection.

December 7, 1989



25. Waste feed line rinsate sampling.

December 7, 1989



26. Waste feed line rinsate sampling.

December 7, 1989



27. Ceiling wipe sampling.

December 7, 1989



28. Scrubber pit concrete chip sampling.

December 7, 1989



29. The last two roll-off containers containing small equipment pieces and debris ready for transportation.

December 8, 1989

APPENDIX G

Health and Safety Plan

HEALTH AND SAFETY PLAN

**PRATT AND WHITNEY
EAST HARTFORD, CONNECTICUT**

**Prepared for
Pratt and Whitney
600 Main Street
East Hartford, Connecticut 06108**

**Prepared by
IT Corporation
2790 Mossdale Blvd.
Monroeville, PA 15146**

November 8, 1989

Project No. 515153

**HEALTH AND SAFETY PLAN
PRATT & WHITNEY, EAST HARTFORD, CONNECTICUT**

A. INTRODUCTION

This plan describes the site Health and Safety procedures that will be implemented and followed by International Technology (IT) and subcontractor personnel during project activities at the Pratt and Whitney Facility in East Hartford, Connecticut.

The requirements of this plan shall apply to all personnel at the work site, including regulatory personnel. IT policy is to conduct all activities in a manner that protects the health of project personnel and the public.

All applicable chemical hazards previously identified have been used as guidelines for this health and safety plan. All activities shall be conducted so that the health and safety of the project personnel and the public are completely protected. The following program includes general safe work practices, personnel protection, personnel and equipment safety, medical surveillance, air quality monitoring and training requirements. The plan covers the safe work practices for physical, chemical and fire hazards. In addition, details for emergency response, first-aid capabilities and fire control are included.

The specification of this health and safety plan shall meet all requirements of both state and federal regulations, and IT procedures.

B. RESPONSIBILITIES

Health and Safety Representative

The Health and Safety representative will be responsible for technical development and coordination of the site health and safety program. Any discussions on matters relating to project health and safety with the Connecticut DEP, USEPA or OSHA will be the responsibility of the health and safety representative. In addition, this individual will provide the site project manager with details concerning the complete work specific programs.

Project Manager

The project manager shall be responsible for field implementation of the health and safety plan. This shall include communication of the site requirements to all personnel participating in the project. Additional communication may be required by the site supervisor to include consultation with the safety and health representative regarding appropriate changes to the health and safety plan. Tailgate safety meetings will be held daily to communicate pertinent health and safety information to all project personnel.

Team Members

All team members shall be responsible for understanding and complying with all site health and safety requirements. One member of the project group shall be assigned the responsibility of cleaning and maintaining the safety equipment and maintaining the decontamination area. All members of this group shall have been provided formal classroom training regarding the hazards and protection involved with this project.

C. HAZARD ASSESSMENT

In dealing with the operations involved in a potentially hazardous location, a variety of safety hazards may exist. All personnel working within the exclusion zone will be familiar with these hazards. These safety precautions will be reiterated during the daily Tailgate Safety meetings.

C.1 Chemical Hazards

The potential chemical hazards involved in this project are airborne concentrations of organic hydrocarbons and heavy metals. Organic vapors may pose a flammability hazard as well as a health hazard.

High vapor concentration of the materials listed in the table in Section C.2 are potentially irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic, may cause unconsciousness, and may have other central nervous system effects. Prolonged or repeated liquid contact with the skin will dry and defat the skin leading to dermatitis or irritation.

Exposure to dust containing heavy metals may cause effects such as acute poisoning, cumulative poisoning, anemia, and cancers. Such effects are normally associated with long term exposures.

Sodium hydroxide will be used for decontamination. Sodium hydroxide is extremely corrosive to the skin and eyes.

C.2 Exposure Standards

Threshold Limit Values (TLVs) refer to airborne concentration of substances which represent conditions that nearly all employees may be repeatedly exposed to day after day without adverse effect. These threshold limits are prescribed by the American Conference of Governmental Industrial Hygienist (ACGIH). They are based upon the best available information from industrial experience and animal or human studies. Because of the wide variation in individual susceptibility, a small percentage of workers may experience discomfort from some substances at

concentrations below the recommended values. It has been policy to use these guidelines for good hygienic practices; however, whenever applicable, stricter guidelines may be utilized.

Currently, exposure guidelines to pesticides and other chemical substances are regulated by the Federal Occupational Safety and Health Administration (OSHA). These exposures are based upon the Time-Weighted Average (TWA) concentration for a normal 8-hour workday and a 40-hour work week. Several chemical substances have short-term exposure limits or ceiling values which allow a maximum concentration to which workers can be exposed continuously for a short period of time without suffering from (1) irritation, (2) chronic or irreversible tissue damage, (3) narcosis of a sufficient degree to result in accidental injury, impair self-rescue, or substantially reduce work efficiency.

The short-term exposure limit (STEL) is defined by the American Conference of Governmental Industrial Hygienists (ACGIH) and Federal OSHA as a 15-minute time-weighted-average exposure which should not be exceeded within a two hour time period during a workday even if the 8-hour time weighted average is within current limits. Federal OSHA requires that a 15 minute "ceiling" concentration never be exceeded for that chemical constituent. This notation appears as the letter "C" after the chemical name.

Under certain chemical substance listings, there may appear a "skin" notation. This refers to the potential contribution to the overall exposure by the cutaneous route including mucous membranes and eye, either airborne or by direct contact. Little quantitative data is available describing absorption as a function of the concentration to which the skin is exposed. Biological monitoring may be considered to determine the relative contribution of dermal exposure to the total dose.

The ACGIH and Federal OSHA have recognized that certain chemical substances may have the potential to be a carcinogen in humans from epidemiological studies, toxicology studies and, to a lesser extent, case histories. Because of the long latency period for many carcinogens, it is often impossible to base timely risk management decisions on the results of such information. Two categories of carcinogens are designated based upon the most current literature and information. These include confirmed human carcinogens and suspected human carcinogens. These chemical categories are recognized to have cancer potential rather than confirmatory proof is based on either 1) limited epidemiologic evidence, experience of clinical reports of single assess, or 2) demonstration of carcinogens in one or more animal species by appropriate methods. The worker potentially exposed to a known human carcinogen must be properly equipped to insure virtually no contact with the chemical constituents. In the case of a suspected human carcinogen, worker exposure by all routes must be carefully controlled by the use of personal and respiratory protection, and administrative or engineering controls.

The following table represents the guidelines currently established by federal OSHA for the materials listed as possible contaminants.

<u>CHEMICAL</u>	<u>OSHA PEL (8 HOUR)</u>	<u>OSHA STEL</u>	<u>OSHA CEILING</u>
METALS			
Arsenic	10 ug/m ³	--	--
Barium	0.5 ug/m ³	--	--
Cadmium	0.2 mg/m ³	--	0.6 mg/m ³
Chromium	0.5 mg/m ³	--	--
Copper	1 mg/m ³	--	--
Lead	50 ug/m ³	--	--
Mercury	--	--	1 mg/10 m ³
Selenium	0.2 mg/m ³	--	--
Silver	0.01 mg/m ³	--	--
ORGANICS			
Carbon Tetrachloride	2 ppm	--	--
1,1 Dichloroethylene	200 ppm*	--	--
Methylene Chloride	500 ppm	--	1,000 ppm
Tetrachloroethylene	50 ppm*	200 ppm*	--
1,1,1 Trichloroethane	10 ppm	--	--
Trichloroethylene	100 ppm	200 ppm	--

* Hour TWA limit recommended by the American Conference of Governmental Industrial Hygienists (ACGIH).

D. AIR MONITORING

Air monitoring for organics and/or metals will be conducted as necessary. NIOSH approved sampling and analytical methods will be used; samples will be analyzed at a laboratory accredited by the American Industrial Hygiene Association (AIHA). Results of personal exposure samples will be used to determine ongoing monitoring frequency.

E. GENERAL WORK PRACTICES

Protective clothing and respiratory protective equipment will be used for various stages of the operation as needed. The level of protection will be specified in the following section depending upon the degree of hazard. (see section 12)

All work being performed at this facility will use the "buddy" system. Prior to beginning the work each day, buddies will be assigned. These team members will keep in visual contact with each other at all times. One member will be responsible to ensure the safety of the other team members. These team members will be aware of any slip, trip, and all lifting hazards along with any potential exposure to chemical substances, heat stress, and general hazards within the work areas. All information regarding work to be performed, emergency procedures, and health and safety hazards will be reviewed before the work begins during

a daily Tailgate Safety meeting. No work will be performed without completing these procedures and appropriate documentation.

All operators of trucks and heavy equipment used on site will be properly trained in the inspection and operation of such equipment. The site supervisor will be responsible to check the proficiency of the operator. One standby person will provide guidance to the equipment operator using either two-way radios or universal hand signals. Perimeter barricades will be placed around the particular equipment used in a fixed location. Audio and/or visual backup alarms will be utilized on all heavy equipment on site.

Only authorized personnel will be permitted in the work area. These authorized individuals must have successfully completed a medical exam and have been properly trained in the use of respiratory protective equipment and specific health and safety hazards. All visitors shall check with the IT representatives in the administrative office, and with the on-site security guard.

Personnel will be prohibited from being transported by any other means than those prescribed for movement of personnel. When trucks or other heavy equipment enters or leaves the site, flagman will direct traffic. This should minimize the possibility of accidents and traffic jams.

Fire extinguishers will be on site. In the event of an emergency, these materials will be ready for the worker's safety and protection. Any deviation from this site safety requirement must be discussed with the Regional Health and Safety Manager.

Smoking will not be permitted on the premises except in the support area or other specified location. Any employee not willing to comply with this procedure will be dismissed from the project immediately.

At least one qualified person competent in both American Red Cross first-aid techniques and cardiopulmonary resuscitation (CPR) will be part of the team performing a specified task. A complete first-aid kit will be readily available on site. If a serious injury occurs, the local hospital and ambulance will be summoned to evacuate the injured or ill person.

No electrical equipment will be permitted in areas where there exist a flammable atmosphere. All static ignition sources will be identified and eliminated by the use of bonding and grounding techniques.

Material Safety Data Sheets (MSDS) will be obtained for every chemical product used on site. This information will be made readily available to all employees upon request and stored in a central location. MSDS or applicable information will be available with regard to materials used in the soil collection and drilling process. All containers of any chemical products will be properly labeled to comply with the Federal OSHA Hazard Communication Standard (29 CFR 1910.1200).

F. HYDROBLASTING SAFETY

Hydroblasting involves a stream of water at 2000 psi, therefore specific safety requirements apply:

- o The operator shall be thoroughly instructed in handling and operating the gun and nozzle and all accessories prior to use.
- o The operator shall wear goggles, faceshield and boots with metatarsal covers.
- o Prior to cleaning piping or vessels, all connecting lines shall be blinded or valved and locked to prevent entry of contaminants.
- o Barricades shall be erected to enclose the work area, and signs shall be posted to warn of high pressure equipment.
- o All components of the hydroblast system shall have a burst pressure at least 4 times the operating pressure.
- o A hose safety shroud shall be used on hoses if operating pressure exceeds 2000 psi.
- o The pressure control shall be a "deadman" type to safely reduce the nozzle discharge pressure when control is released.
- o The pressure discharge gauge shall be clearly visible at all times.
- o A pressure relief device must be installed on the pump and set at 110% of the maximum working pressure of the system.
- o A strainer or filter must be installed on the water supply system to prevent clogging.

G. HEAVY EQUIPMENT OPERATION

- o Only experienced, demonstrably proficient equipment operators will be used to operate such heavy equipment as backhoes, front-end loaders, cranes, etc. Where certification or licensing requirements exist, such personnel shall possess appropriate certification and/or licensing for operating specified heavy equipment.
- o While operating heavy equipment in the work area, the equipment operator shall maintain communication with a designated signalman through either direct voice contact or approved standard hand signals. In addition, all site personnel in the immediate work area shall be made aware of the equipment's operation.
- o All equipment, such as pipe, rubber, etc., shall be kept out of traffic lanes and access ways. Equipment shall be stored so as not to endanger personnel at any time.
- o A flagman with roadwork vest, signs, cones, and high-level warning signs shall be provided when it is necessary to control normal vehicular traffic due to vehicles entering or leaving the site.

H. FIRE SAFETY

- o Hot work shall not be conducted unless all requirements of ITC PRO 9571.1 (Welding, Cutting, and Other Hot Work in Hazardous Locations) have been met.
- o Equipment on-site shall be bonded and grounded, spark-proof, and explosion resisted, as appropriate. Particular attention to bonding/grounding shall be made during transfer of flammable/combustible liquids into vacuum trucks and when ventilation equipment is utilized.
- o A fire extinguisher with a minimum rating of 10B:C shall be strategically located in the area of active work.
- o No smoking shall be allowed in the work area.

I. REGULATED AREAS

The work area will include three separate zones: an exclusion ("hot") zone, a contamination reduction zone, and a support zone.

The Exclusion Zone will consist of the entire area of suspected contamination during operations. All employees will use proper personnel protective equipment when working in those areas. The exclusion zone will be a defined area where there is a possible respiratory and/or contact health hazard. In most instances this area will be the incinerator building, with the entrance used to delineate the beginning of the zone. The location of exclusion zone will be identified by cones or other appropriate means.

A Contamination Reduction Zone will be established. Decontamination will be performed in the contamination reduction zone. All personnel entering or leaving the exclusion zone will pass through this area in order to prevent any cross-contamination and for the purpose of accountability. Tools and any equipment or machinery will be decontaminated in a specific location. The decontamination of all personnel will be performed on site adjacent to the exclusion zone. Personal protective outer garments and respiratory protection will be removed in the contamination reduction zone and properly labelled. This zone will be outside the incinerator building.

The Support Zone will consist of an area outside the contamination reduction zone. The support zone will be located to prevent employees from being exposed to any organic vapors, dust or fiber levels above environmental levels. Eating, drinking, or smoking will be permitted in the support area only after washing both face and hands. This zone will be outside the incinerator building, away from the Contamination Reduction zone.

J. MEDICAL SURVEILLANCE

All personnel on-site will have successfully completed a preplacement or periodic (annual) physical examination. This should comply with ITC PRO 9410.1. This examination has been designed to comply with all regulatory requirements.

Pre-employment, Periodic Surveillance, Exit Physicals

Tests that are performed for employment physicals include the following listed:

- o Medical and occupation history and past gastrointestinal, hematologic, renal cardiovascular, reproductive, immunological and neurologic problems. Along with a history of respiratory disease and personal smoking habits.
- o Blood pressure measurements.
- o Complete blood count and differential to include hemoglobin and hematocrit determinations, red cell indices, and smear of peripheral morphology.

- o Blood urea nitrogen and serum creatinine
- o Urinalysis (dipstick and microscopic examination)
- o Audiometric examination
- o Pulmonary function test ($FEV_{1.0}$ and FVC)
- o SMA-25 or equivalent liver function test
- o EKG for employees over 45 years old or when other complications indicate the necessity
- o Drug and alcohol screen

IT Health and Safety Personnel maintain all employee medical records in the Regional offices. These records are continually reviewed and updated. IT will maintain all medical records for a period of 30 years, and a copy of these records will be made available to any employee for either review or copying upon request. In order to obtain a copy of the medical record, a written release order must be completed by the employee and submitted to the Health and Safety representative.

The medical surveillance provided to the employees includes a judgement by the medical examiner of the ability of the employee to use either positive or negative pressure respiratory equipment. Any employee found to have medical condition which could directly or indirectly be aggravated by exposure to these chemical substances or by the use of respiratory equipment will not be employed for the project.

All part-time employees and all non project personnel visiting the site will be restricted unless evidence is presented that a medical examination covering all the above mentioned tests have been conducted with satisfactory results.

K. TRAINING

All employees assigned to the project will have completed a training program which includes, as a minimum, the following:

- o Basic Safety Training - This course stresses the fundamentals of safety including the causes and prevention of slip, trip, and fall hazards, confined space entry, heat and/or cost stress illness and prevention.

- o Hazards and Protection - This course deals with the identification and recognition of safe work practices with toxic materials. The use and limitation of applicable protective clothing, respirators, and decontamination procedures. Respiratory fit-test is provided to each employee attending the course.
- o First Aid and CPR - It is necessary for some employees in this project group to have completed both first aid and CPR training.
- o Site Specific Safety Training - This course covers the mandates of the project health and safety plan. In particular, this stresses emergency response procedures and the various health hazards.
- o Waste Operation Training - This course is a hands on session with personal protective equipment, drum handling, sampling and decontamination procedures.

Any new employee who has not completed 40 hours of formal training class will receive this training before beginning to work on the project. This will apply to all subcontractors working for IT Corporation.

Tailgate Safety Meetings will be conducted at the beginning of each workshift, or whenever new employees arrive on the jobsite. The health and safety considerations for the particular day's activities will be reviewed, and the protective equipment and other materials necessary to perform the work will be outlined.

L. PERSONAL PROTECTION

LEVELS OF PROTECTION

Specific levels of protection will be used to safeguard IT employees on the job from potential hazards. Three distinct levels of protection may be required for this project. The final determination for IT personnel and subcontractors of any required level of protection will be based upon the hazards and current conditions of the worksite. The only person who may make this determination is the Health and Safety Manager. The situations requiring specific levels of protection are described in the following sections.

LEVEL B PROTECTION

Level B protection will be required when airborne concentrations exceed two times the AGGIH Threshold Limit Value (TLV) or OSHA PEL. Appreciable air contamination may occur from heavily contaminated soil excavation, requiring this level of protection. Work in areas where concentrations are unknown or may change suddenly also require Level B protection.

The following equipment will be used for Level B protection:

- o Full face air supply respirator (SCBA or Air Line) which is NIOSH/MSHA approved.
- o Hooded, chemical resistant outer suit. Tyvek or polytyvek inner suit.
- o Gloves (outer) - chemical resistant (Nitrile)
- o Gloves (inner) - chemical resistant (Latex)
- o Boots - chemical resistant Neoprene with steel toes with latex booties.
- o Hard hat
- o Hearing protection (if necessary)

LEVEL C PROTECTION

Level C protection will be required when the airborne concentration of suspected contaminants are known to be at or slightly above the ACGIH Threshold Limit Value (TLV) or the OSHA PEL. This level of protection will be utilized during most of the demolition, and when decontaminating tools and equipment.

The following equipment will be used for Level C protection:

- o Full face, air purifying respirators with organic vapor cartridge in combination with high efficiency particulate filter (HEPA) which are NIOSH/MSHA approved. Half face respirators will be utilized if accompanied by chemical splash goggles and specified by the Regional Health and Safety Manager.
- o Hooded, chemical resistant Polyethylene coated TYVEK. Saranex if possibility of wetting exists.
- o Gloves - (Outer) - chemical resistant Nitrile
- o Gloves - (Inner) - chemical resistant (latex).
- o Boots - (Outer) - chemical resistant Neoprene with steel toes or double latex booties where there exist only surface contamination over steel toed shoes.
- o Hard hat
- o Hearing protection (if necessary)

LEVEL D PROTECTION

The minimal level of protection that will be required of IT personnel and subcontractors at the site will be Level D. This level will be utilized in the support zone and other areas remote from the exclusion zone.

The following equipment will be used for Level D protection:

- o Coveralls
- o Boots/shoes - safety or chemical protection (latex booties) with steel toes.
- o Safety glasses or goggles
- o Hard hat
- o Chemical resistant nitrile or PVC protective gloves with surgical latex undergloves.

M. RESPIRATORY PROTECTIVE EQUIPMENT AND USE PROTOCOL

A comprehensive respiratory protection program has been established by IT Corporation. This program will be required in all locations where use of such equipment could lessen the potential for adverse health affects to any employee. The type of respiratory equipment will be continuously reevaluated based upon the current level of exposure. The only person who will be able to modify the level of respiratory protection is the regional Health and Safety Manager.

As part of the respiratory training program, each employee will have been instructed in the following elements:

- o Nature of the respiratory hazard on the work site and the appraisal of what may happen if the respiratory protection is not utilized.
- o Use and proper fitting of the respirator.
- o Cleaning, disinfecting, inspection, maintenance, and storage of the respirator.
- o Proper selection, capabilities, and respirator limitations.

The respiratory protection and training program will be conducted, documented, and recorded by the Health and Safety representative.

Routinely used respiratory equipment will be inspected, cleaned, and disinfected daily to help assure proper hygienic practices. A safety equipment custodian shall maintain the respirators. An inspection of these breathing devices will include the following:

- o Examination of the head straps for breaks, loss of elasticity, broken or malfunctioning buckles, and other attachments.
- o Examination of the facepiece for excessive dirt, cracks, tears, distortion, holes, or inflexibility.
- o Examination of the exhalation and inhalation valves for any foreign material, cracks, tears, distortion, in the valve. Additional checks will be made to inspect for proper insertion, defective valve covers, or improper installation.
- o Examination of air purifying elements for incorrect cartridge, expired shelf-life of the cartridge, cracks or dents in the cartridge or cartridge holder.
- o Examination of proper insertion of the cartridges into the facepiece and a check of the gaskets inside the cartridge holder.
- o Examination of air cylinders for adequate air volume. Only grade D air will be utilized for breathing air.

When Level C protection is required, respiratory cartridges will be changed daily. This requirement may be modified by the Health and Safety representative depending upon the exposure level of the air contaminants.

The safety technician will maintain the respiratory equipment and be knowledgeable in the cleaning and disinfection process. Each individual will scrub boots and gloves using detergent in warm water using a brush and then thoroughly rinsing with clear water. Finally, the respirators will be dried in a clean location after each day's use. If broken or malfunctioning parts are found during the cleaning process, these parts will be replaced or new respiratory equipment will be issued to the user.

The respiratory equipment will be stored in an area protected from any mechanical damage. These devices will also be stored in a location that provides protection against dust, heat, excessive moisture, or damage by chemical contact. The storage area for the respirators should be in a readily accessible location.

N. DECONTAMINATION PROCEDURES

PERSONAL DECONTAMINATION

A decontamination zone will be established at the perimeter of the exclusion zone. A step off area will be designated just outside the contamination zone. All employees entering from the exclusion zone will pass through the decontamination area to remove their respirators and/or protective clothing. The employees may then enter the break area after washing their face and hands. Employees must be screened by the "decon person" to ensure compliance with this procedure.

At the end of each work period (before eating, drinking smoking, or leaving the site) each person who has entered the construction area will decontaminate by passing through the contamination reduction line. Each of the following stations will be entered and used as appropriate.

- o Equipment/Tool Drop Station
- o Boot Wash - soiled boots will be washed in a tub containing a detergent solution.
- o Boot Wash - personnel will step into a tub containing rinse water after washing boots.
- o Glove Wash - intact gloves will be wiped clean over a glove was bucket containing detergent and water.
- o Glove Rinse - washed gloves will be rinsed with water or wiped with a water wet towel.
- o Used coveralls will be dropped into a bag-lined garbage can for disposal at an approved facility.
- o Spent disposable respiratory or cartridges will be dropped into a bag-line garbage can.
- o Clean boots will be placed under the work table at the clean end of the corridor.
- o Clean respirators, hard hats, goggles and face shields will be placed on the work table at the clean end of the corridor.
- o Personnel may then exit the site through the access control point.

Soiled boots, hard hats, respirators, and other equipment will be inspected daily, washed and scrubbed in a detergent/water solution. After cleaning, equipment will be rinsed thoroughly in water and allowed to dry on a clean surface.

If there is a rip or tear in the employee's protective clothing, that individual will remove the torn garment in the decontamination area and new protective clothing will be issued in order for the employee to return back to work. The same procedure will apply to defective respiratory equipment.

EQUIPMENT DECONTAMINATION

Any equipment used inside the exclusion zone will be considered contaminated and must be cleaned before leaving the work site. Decontamination of all large equipment including generators, backhoes, and other equipment will be performed on site (prior to personnel decontamination). Verification that all equipment has been properly decontaminated will be the responsibility of the site project manager. Proper decontamination may include wipe samples of the surfaces of all equipment. All contaminated solvents generated from the cleaning operation will be collected and containerized for disposal.

SITE SECURITY

Controlled access to the regulated area will be established. Only authorized personnel shall be permitted to enter the regulated area. No one will enter the exclusion or the contamination reduction zones without appropriate authorization. Excavation and sampling operations will be suspended until unauthorized individuals have left the site.

- o All persons entering the regulated area will be equipped with appropriate personnel protective devices.
- o All persons entering the regulated area must be familiar with and abide by the health and safety plan.
- o All persons must have completed the necessary 40-hours training for uncontrolled hazardous waste site operations and emergency response.
- o All employees will sign in and out daily while performing duties on-site. The record of all site entry personnel shall be monitored with the site security officer.

O. HEAT STRESS

Remediation work in protective clothing may result in heat related disorders. One or more of the following control measures can be used to help control heat stress:

- o Provision of adequate liquids to replace lost body fluids. Employees must replace water and salt lost from sweating. Employees must be encouraged to drink more than the amount required to satisfy thirst. Thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement.

- o Replacement fluids can be a 0.1 percent salt water solution, commercial mixes such as Gatorade or other product, or a combination of these with fresh water. Employees should be encouraged to salt their foods more heavily.
- o Establishment of a work regimen that will provide adequate rest periods for cooling down. This may require additional shifts for workers.
- o Cooling devices such as vortex tubes or cooling vests and be worn beneath protective garments.
- o All breaks are to be taken in a cool rest area (77 degrees fahrenheit is best).
- o All employees shall be informed of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress.

During periods of high temperature and/or humidity, the site supervisor or the Health and Safety representative will continually observe the workers for symptoms of heat stress especially in areas where protective clothing is being worn. If the body's physiological process to maintain a normal body temperature fails, or are overburden due to excessive heat exposure, a number of physical reactions can occur ranging from mild symptoms such a fatigue, irritability, anxiety, and decreases in mental concentration. Heat related problems are presented below:

Heat Rash - This caused by continual exposure to heat and humid air, and aggravated by chaffing clothes. Heat rash decreases a person's ability to tolerate heat as well as becoming an irritating nuisance.

Heat Cramps - This is caused by profuse perspiration with inadequate water intake and chemical electrolyte imbalance. This results in muscle spasm and pain in the extremities and abdomen.

Heat Exhaustion - Increased stress on various organs to meet increasing demands to cool the body will result in signs and symptoms including shallow breathing; pale, cool, moist skin; profuse sweating; dizziness and lassitude.

Heat Stroke - This is the most severe form of heat stress which must be treated immediately by cooling the body or death may result. Signs and symptoms include red, hot, dry skin; no perspiration; nausea; dizziness and confusion; strong, rapid pulse; and coma.

P. EMERGENCY RESPONSE PLAN

Emergency response procedures will be developed for extraordinary conditions that may occur at the work site and will be covered during the Tailgate Safety meeting.

GENERAL RESPONSE CONSIDERATIONS

Emergencies must be dealt with in a manner to minimize the health and safety risk to all site personnel. Work activities will be conducted in groups of at least two workers (buddy system) to provide continuous monitoring in the event of an emergency. Emergency signals will be developed to include a continuous 30-second blast of a siren or horn. Other signals will be reviewed such as those developed for restricted air flow or breathing difficulty. A stand-by person will be dressed and ready to assist in the event of an emergency.

FIRE/EXPLOSION

Upon notification of a fire or explosion on-site, the designated emergency signal shall be sounded and all site personnel assembled at the decontamination line. The fire department shall be alerted and all personnel moved to a safe distance from the involved area.

PERSONAL PROTECTIVE EQUIPMENT FAILURE

If any site worker experiences a failure or alteration of protection factor, that person and his/her buddy shall immediately leave the Exclusion Zone. Re-entry shall not be permitted until the equipment has been repaired or replaced.

OTHER EQUIPMENT FAILURE

If any other equipment on-site fails to operator properly, the Project Team Leader and site Safety Officer shall be notified and then determine the affect of this failure on continuing operations on site. If the failure affects the safety of personnel or prevents completion of the Work Plan tasks, all personnel shall leave the Exclusion Zone until the situation is evaluated and appropriate actions taken.

In all situations, when an on site emergency results in evacuation of the Exclusion Zone, personnel shall not re-enter until:

- 1) The conditions resulting in the emergency have been corrected.
- 2) The hazards have been reassessed.
- 3) The site safety plan has been reviewed.
- 4) Site personnel have been briefed on any changes in the Site Safety Plan.

RESPONSIBILITIES

The site project manager will have the responsibility for directing the response activity in the event of an emergency. The responsibilities are described below:

- o Assess the emergency situation and notify site security personnel.
- o Determine the required response measures by informing the site supervisor by radio communication.
- o Notify the appropriate response teams of the specific action that will be taken upon request.
- o Determine and coordinate the on-site personnel actions for the particular emergency situation.
- o Contact and coordinate with any governmental or regulatory agency.
- o Immediately complete the Supervisor Injury Report form upon occurrence of the accident or incident and list on the OSHA Occupational Injury/Illness form 200 if appropriate.

PUBLIC RESPONSE AGENCIES

Before the start of the construction and decontamination operations, the Project Manager will develop a list of public response agencies which may be contacted depending on the nature of the emergency. This list of contact agencies will include the name, address, and telephone number of the following:

- | | |
|-----------------------|----------------|
| o Police Department | 528-4401 |
| o Fire Department | 528-4173 |
| o Emergency Ambulance | 911 |
| o Poison Control | (212) 764-7667 |
| o Hartford Hospital | 524-2525 |

In the event of an emergency, an agency may assume authority for the emergency response. Personnel should be instructed to assist the agency in charge. The appropriate contacts include, but not limited to, the following:

o U.S. EPA	(617) 573-9644
o Connecticut DEP	566-2264
o U.S. Coast Guard	(800) 424-8802
o National Response Center	(800) 368-5888
o National Poison Control Center	(404) 588-4400

The list of contacts shall be posted at several prominent locations.

ACCIDENTS AND NONROUTINE EVENTS

The types of emergencies outlined below are not all inclusive and the corresponding response procedures will not be considered inflexible. Every accident presents a unique event that must be dealt with by key trained personnel. The prime considerations are to provide the appropriate initial response to assist those in jeopardy without placing additional personnel at unnecessary risk.

SPILL PREVENTION CONTROL AND CLEANUP COUNTER MEASURE PLAN (SPCC)

Responsible Authority: Site Superintendent
Reporting Authority: OSC

On Site Equipment List Includes

- o Sorbent Pads
- o Sorbent Material
- o Over-Packs
- o HNU Meters
- o Fire Extinguishers
- o Air Horn
- o First Aid Kit
- o Rolls of Polyethylene sheeting
- o Brooms and Shovels
- o Self Contained Breathing Apparatus
- o Protective Clothing
- o Diaphragm Pump
- o Granular Lime

IT's basic approach to any spill or release is:

Control
Contain
Communicate
Clean-Up

In the event of a spill the drum staging area, the spilled material will have already been categorized, therefore, the nature of the material will be known. Based upon this knowledge the appropriate sorbent and/or neutralization material will be applied immediately to control and contain the material. The site superintendent will be notified who will then direct the clean-up operations and perform the required notifications.

If a spill occurs in the "Haz-Cat" area prior to characterization, the on-scene field chemist will determine the appropriate control measures to be initiated immediately. The site superintendent will be notified who will then direct the required clean-up activity.

IT's work plan for this project has been developed incorporating features to prevent and contain the release of any hazardous materials.

VAPOR EMISSIONS

In the event of significant vapor emission, all work shall stop immediately. The source of the emission shall be located and controlled as quickly as possible. State, local and USEPA authorities shall be notified if vapor levels are significant or if vapors leave the site. If a fire or explosion hazard exists, local authorities will be notified.

WORKER INJURY

If a person working in an area is physically injured, American Red Cross first-aid procedures will be followed. Depending upon the severity of the injury or illness, emergency medical response may be obtained accordingly. If the person can be moved, that person will be taken to a location from the work area where emergency first aid treatment can be administered. The local emergency medical facility should be contacted along with an ambulance.

The site project manager will prepare a written report detailing the particular accident, its causes, and consequences within one day from the time of the accident.

PERSONNEL INJURY IN THE EXCLUSION ZONE

Upon notification of an injury in the Exclusion Zone, the designated emergency signal shall be sounded. All site personnel shall assemble at the decontamination line. The rescue team will enter the Exclusion Zone (if required) to remove the injured person to the hotline. The Site Safety Officer and Project Team Leader should evaluate the nature of the injury, and the affected person should be decontaminated to the extent possible prior to the movement to the Support Zone. The on-site EMT/or First Aider shall initiate the appropriate first aid, and contact should be made for an ambulance with the designated medical facility (if

required). No persons shall re-enter the Exclusion Zone until the cause of the injury or symptoms is determined.

PERSONNEL INJURY IN THE SUPPORT ZONE

Upon notification of an injury in the Support Zone, the Project Team Leader and Site Safety Officer will assess the nature of the injury. If the cause of the injury or loss of the injured person does not affect the performance of site personnel, operations may continue, with the on-site EMT/or First Aider initiating the appropriate first aid and necessary follow-up as stated above. If the injury increases the risk to others, the designated emergency signal shall be sounded and all site personnel shall move to the decontamination line for further instructions. Activities on-site will stop until the added risk is removed or minimized.

If the injury to the worker is of chemical nature, the following first-aid procedures will be instituted as quickly as possible:

- o Eye Exposure - If contaminated material gets into the eyes, the eyes will be flushed immediately at the eyewash station using copious amounts of water while lifting up the lower and upper eyelids.
- o Skin Exposure - If contaminated sludge or corrosive liquid material gets on the skin, the affected area will be washed with soap or mild detergent.
- o Inhalation - If an individual inhales a volume of toxic or corrosive vapors, the employee will be removed to fresh air at once. If breathing has stopped, artificial respiration will be performed on the affected individual until medical attention can arrive on scene and transport the patient to the nearest medical facility.
- o Ingestion - In the event a person ingests a toxic liquid or solid material, medical attention shall be obtained at once.

Q. RECORDKEEPING

All exposure monitoring conducted during the project will be recorded along with the description of the field activities. The recorded results and the methodologies will be kept for a period of at least 30 years.

Records of completed formal health and safety training for any project employee are available upon request. Any health and safety training performed on site or prior to beginning the project will be documented accordingly.

All Tailgate Safety Meetings (daily) will be kept in the form of a log book for review by the Health and Safety Coordinator. Tailgate Safety meetings are conducted prior to the beginning of every workshift in order to discuss the work activity, potential exposure to various chemicals, physical hazards, type of protective clothing, and miscellaneous items of interest.

All logs and reports required by either local, state, and federal regulations will be kept and submitted accordingly.